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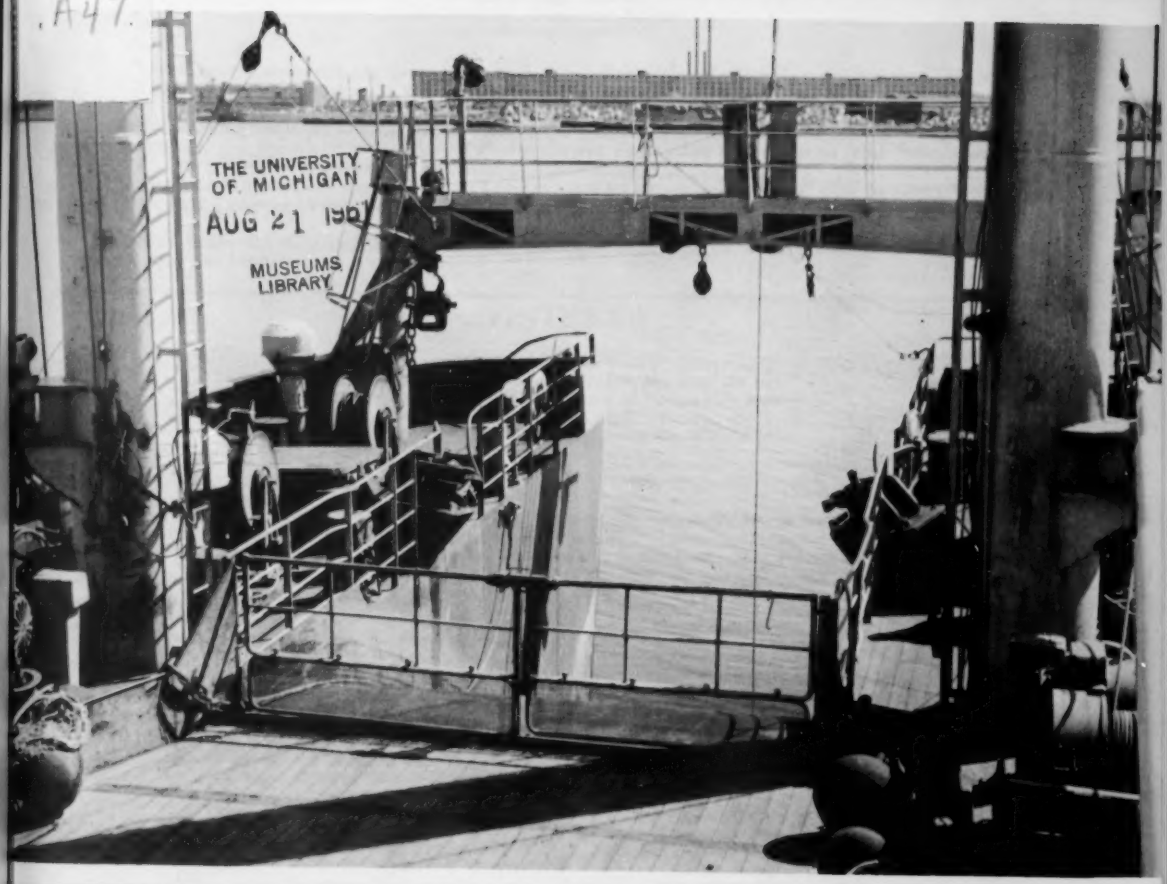

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COMMERCIAL FISHERIES REVIEW

A review of developments and news of the fishery industries prepared in the BUREAU OF COMMERCIAL FISHERIES.

Joseph Pileggi, Editor
H. M. Bearse, Assistant Editor

Address correspondence and requests to the: Chief, Branch of Market News, Bureau of Commercial Fisheries, U. S. Department of the Interior, Washington 25, D. C.

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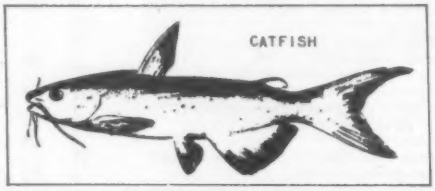
TILAPIA EASILY GROWN IN PONDS

Pond experiments in Alabama showed that close to 2,000 pounds per acre of tilapia could be produced with fertilization and pellet feeding. As a result of the same techniques, 1,200 pounds per acre of channel catfish were caught by anglers.



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PROCESSING AND QUALITY STUDIES OF SHRIMP HELD IN REFRIGERATED SEA WATER AND ICE

Part 5 - Interchange of Components in a Shrimp-Ice System

By Jeff Collins*

ABSTRACT

Pink shrimp were held for various periods in ice. Data are given showing the effect of holding time on the weight of the peeled meats and precooked meats. Changes in water, ash, salt, and solids contents of the meats are also given.

BACKGROUND

In the previous paper in this series, the material balance of a system of shrimp and refrigerated sea water was reported (Collins 1960). Changes in water, salt, ash, and solids contents of the components of the system were observed to be a function of the holding time. Significantly, it was found that as a function of holding time, both the raw meats and the precooked meats lost considerable solids.

The purpose of the experiment reported here was to determine if pink shrimp held in ice undergo similar changes.

EXPERIMENTAL

The general experimental approach was to hold whole pink shrimp in ice under ideal conditions and then, as a function of holding time, to determine any changes in weight in the moisture, salt, ash, and solids contents of the raw and precooked meats.

MATERIAL: Whole, fresh, pink shrimp (Pandalus sp.) were iced overnight in Petersburg, Alaska. Upon being received at the Ketchikan Laboratory on the following morning, they were briefly rinsed in cold fresh water and were allowed to drain for 15 minutes in a wire basket.

HOLDING METHOD: The drained shrimp (1,350 grams for each of five samples) were placed on a single layer of cheese cloth and were mixed with four times their weight of ice. The cloth was folded over the mixture of ice and shrimp and was placed on top of a layer of ice 1-foot deep in an insulated ice chest. The samples were covered with 6 inches of ice and were top-iced every other day.

SAMPLING TECHNIQUE: 1. At various intervals during a total holding period of 9 days samples were removed from the ice chest (fig. 1), and the shrimp were separated from the ice by hand and were allowed to drain on a wire screen for 5 minutes.

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Fig. 1 - Removing a sample of shrimp stored in ice for analysis.

2. The whole shrimp were carefully peeled by hand so that all meats were separated from the waste.

3. The meats were weighed, and a portion was saved for subsequent analysis.

4. The remaining meats were reweighed and precooked as described in the previous paper (Collins 1960); that is, they were cooked exactly 2 minutes under a slightly positive steam pressure, followed by cooling for 5 minutes on a cloth towel. The samples were then reweighed and saved for subsequent analysis.

ANALYTICAL METHODS: The analyses for moisture, total chloride, and ash were carried out as previously described (Collins, Seagran, and Iverson 1960).

RESULTS AND DISCUSSION

The weights of the peeled and precooked meats and their contents of water, ash, salt, and solids for each period of holding are given in tables 1 and 2. The data for the raw and precooked meats have been adjusted so that each value is independent of the removal of prior samples. The values given for ash are termed "corrected ash" and were obtained by subtracting the salt from the total ash. The solids values do not include ash or salt. The solids therefore consist essentially of the nitrogeneous components of shrimp along with a small amount of oil and other minor constituents.

GROSS WEIGHT CHANGES: Data from tables 1 and 2 indicated that there is an over-all gain in weight in both the whole shrimp and the peeled meats. Since this gain is caused, for the most part, by uptake of water that is later lost during the precook, it was thought that any consideration of yield would be quite meaningless if based on these two components of the system. Consequently, the solids data of the precooked meats were used as a base for yield.

PEELED MEATS: The raw meats gained in weight rapidly, owing to the absorption of water. This over-all increase in weight was accompanied by a loss of salt and solids. Corrected ash values were unchanged.

Table 1 - Raw Peeled Meats: Change in the Weight of the Raw Peeled Meats and of Their Component Parts With Time of Holding in Ice

Holding Time	Total Weight of Peeled Meats After Various Holding Periods of Time	Total Weight of the Components of Peeled Meats After Holding 1,350 g. Whole Shrimp in Ice for Various Time Periods			
		Water	Chloride	Corrected Ash (ash-NaCl)	Solids1/
Days	Grams	Grams	As g. NaCl	Grams	Grams
0	444	365	3.6	2.7	73
1	499	417	3.5	2.7	76
3	495	423	2.5	3.9	66
5	508	439	1.8	2.7	64
7	499	432	1.8	2.8	62
9	501	440	1.1	2.6	58

1/Solids: The total weight of solids, other than ash and NaCl. This solids value is essentially the nitrogeneous components plus certain minor constituents. The solids value is obtained by subtracting the water, NaCl, and corrected ash from the total weight for each holding period.

PRECOOKED MEATS: The water content of the precooked meats increased during the first day of holding and then slowly decreased. Longer holding periods resulted in lower salt, ash, and solids contents.

Table 2 - Precooked Meats: Change in Weight of the Precooked Meats and of Their Component Parts With Time of Holding in Ice

Holding Time	Total Weight of Precooked Meats After Various Holding Periods of Time	Total Weight of the Components of Precooked Meats After Holding 1,350 g. Whole Shrimp in Ice for Various Periods of Time			
		Water	Chloride	Corrected ash (ash-NaCl)	Solids
Days	Grams	Grams	As g. NaCl	Grams	Grams
0	273	207	2.2	2.7	61
1	305	237	2.0	2.9	63
3	280	221	1.9	2.4	55
5	274	217	1.2	2.2	54
7	267	211	1.0	2.4	52
9	253	202	0.6	2.3	49

1/See footnote table 1.

ICE VERSUS BRINE HOLDING: Since the shrimp used in the experiment reported here were caught 5 months later than those used in the previous experiment on brine holding (Collins 1960), direct comparisons cannot be made between the two lots of shrimp held in ice and brine. However, the general trend for the two systems can be compared. Even though solids were lost in solution, holding whole shrimp in either ice or refrigerated sea water resulted in a substantial increase in gross weight, primarily caused by an uptake of water. The raw peeled meats subsequently obtained from shrimp held in either ice or refrigerated sea water also gained in gross weight because of water uptake and despite the lost solids. The precooked meats from these two systems of holding went through similar changes except that the water content increased only slightly the first several days of holding, then gradually decreased.

Thus, the processor of canned shrimp will suffer a significant loss in yield as a function of holding time by use of either system. At present, it seems that the best way to minimize loss of yield is to process the shrimp as quickly as possible after they are captured.

SUMMARY

It was reported in the previous paper in this series that definite changes occur in the water, salt, ash, and solids contents of the various components of a system of shrimp and refrigerated sea water. The purpose of the work reported here was to determine if similar changes occur in shrimp held in ice. Accordingly, whole, raw, pink shrimp were held in ice up to 9 days. The raw meats and subsequently prepared precooked meats were analyzed for water, ash, salt, and solids contents; and the general trends were compared with those obtained in the experiment employing refrigerated sea water. As a consequence of holding in ice, both the whole shrimp and the raw peeled meats gained in weight and lost solids and salt. Except for the first day, when the water content increased, the water, ash, salt, and solids contents of the precooked meats all decreased with holding time.

A comparison in the general trend of the data between the two systems of holding indicate that there is a considerable loss in yield as a function of time of holding in either system.

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_____; SEAGRAN, H.; and IVERSON, J.
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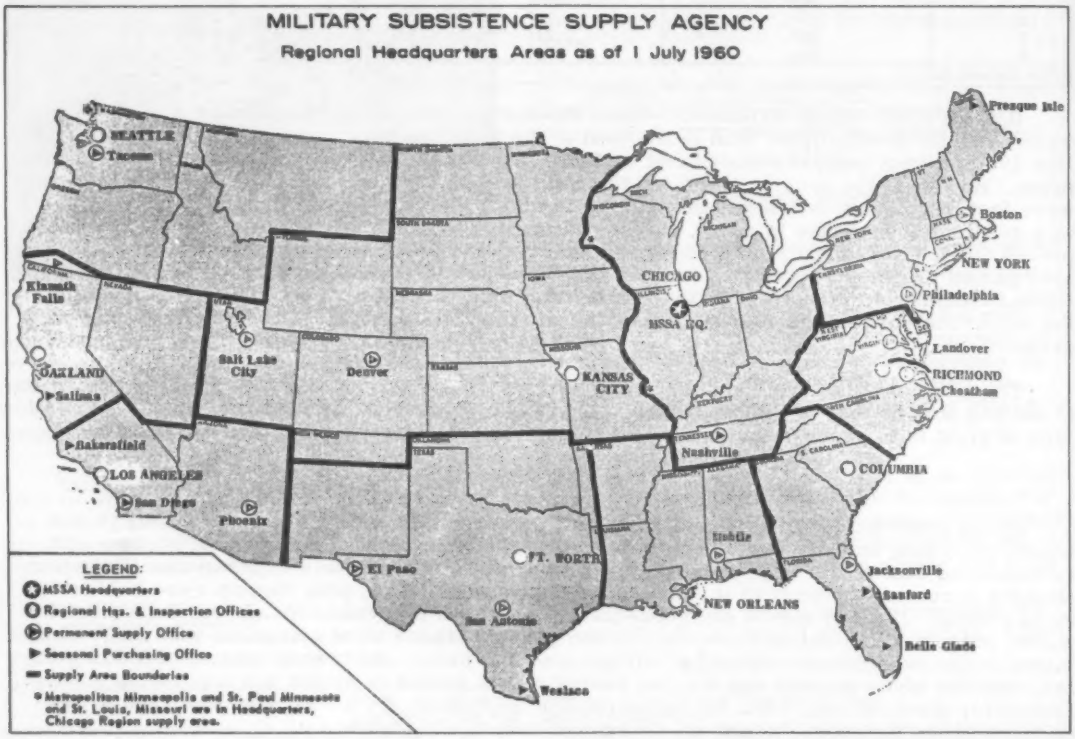
A $700 MILLION FOOD BUYER OFFERS SPECIAL OPPORTUNITIES TO SMALL BUSINESS FIRMS

By Walter R. Jeffrey*

Selling food to the Armed Forces by small business firms is neither difficult nor roundabout. The way is straightforward. It also runs two ways.

What is a "small business?" And who is the Armed Forces' buying organization putting up sign posts pointing to more business and, presumably, to more profits for small business concerns? What does it do for the small business supplier and how does it do it?



First of all, let us be clear on the definition of small business as the term applies to the sale of food to the Armed Forces. As defined in the Congressional small business program carried out by the U. S. Department of Defense, a small business concern is one that is:

1. Independently owned and operated.

2. Is not dominant in its field of operation.

3. With its affiliates employs fewer than 500 employees, or is certified as a small business concern by the Small Business Administration.

*Business Advisor, Military Subsistence Supply Agency.

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4. Additionally, the concern has not previously been denied small business status by the Small Business Administration.

5. The concern is a manufacturer or regular dealer, which submits bids or offers in its own name, but which proposes to furnish a product or end items which are:

a. Manufactured or produced by itself.

b. Not manufactured or produced by itself but which agrees to furnish, in the performance of any contract awarded it, a product or end item manufactured or produced in the United States, its possessions, or Puerto Rico, by a small business concern.

There is a regulatory definition or formula for clarification of each of the above terms to be found in the Armed Services Procurement Regulations and about which information may be obtained from MSSA or the SBA. How to compute the fewer than 500 employees for the concern with its affiliates is important.

However, you should be aware that if you do not meet one or more and have not been certified you will not be entitled to regulatory preferential treatment nor to participation in set-asides. In the matter of definitive prerequisite, your concern can be a small business for one transaction and be treated as a large business for another transaction according to whether the end item you offer was manufactured, produced, or processed by a small business concern or a large business concern.

There are differences between procurement of perishable and nonperishable subsistence and nonsubsistence items. You will become acquainted with applicable procedures that affect your offers through specific information given you at each time.

If you meet these five prerequisites or have been certified, you are entitled to the special procurement privileges offered for small business benefits.

Answering the second question: the Armed Forces' food buyer is the MILITARY SUBSISTENCE SUPPLY AGENCY. It is a Department of Defense organization operated by the U. S. Army Quartermaster Corps. MSSA--as it is called--is the wholesale food buyer for the Army, Navy, Air Force, and Marine Corps in the United States and overseas.

Its headquarters is in Chicago. It has regional buying offices in ten principal cities of the country: Chicago, Columbia (S. C.), Ft. Worth, Kansas City, Los Angeles, New Orleans, New York, Oakland, Richmond, and Seattle.

Because of their proximity to central supply sources, some offices are national procurement centers for certain items for the entire Armed Forces. All of them make local purchases--chiefly fresh foods in less-than-carload lots--for military installations in their region. Offices in port cities have the additional job of dispatching food supplies to the United States fleet and to U. S. military bases overseas.

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Military Subsistence Supply Agency
226 W. Jackson Boulevard
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Chicago 6, Illinois

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Fort Wprth, Texas

Commanding Officer
Hq., Kansas City Region, MSSA
623 Hardesty Avenue
Kansas City 24, Missouri

Commanding Officer
Hq., Los Angeles Region, MSSA
929 South Broadway
Los Angeles 15, California

Commanding Officer
Hq., New Orleans Region, MSSA
4400 Dauphine Street
New Orleans 40, Louisiana

Commanding Officer
Hq., New York Region, MSSA
3rd. Avenue and 29th Street
Brooklyn 32, New York

Commanding Officer
Hq., Oakland Region, MSSA
2155 Webster Street
Alameda, California

Commanding Officer
Hq., Richmond Region, MSSA
1722 Arlington Road
Richmond 30, Virginia

Commanding Officer
Hq., Seattle Region, MSSA
Pier 91
Seattle 99, Washington

The Military Subsistence Supply Agency also is one of the several "single manager" establishments of the Defense Department. This means that it has wholesale supply responsibility for procurement, inspection, storage, and distribution of food for all the military services. There are similar single-manager agencies for clothing and textiles, for general and industrial supplies, for medicines, and for other common supply categories.

The responsibilities for military food supply are assigned to the Secretary of the Army by the Secretary of Defense. MSSA gets the working task from the Army Secretary through the Quartermaster General.

So much for MSSA. More interesting to a small business firm is how much business is available from MSSA? How can it obtain a share?

In the first place, realize that the over-all food procurement program for the Army, Navy, Air Force, and Marine Corps aggregates each year about one and one-quarter billion dollars. About 60 percent of that total, nearly $700 million, is purchased by MSSA. The remainder is spent locally--principally for perishable foods--by individual military installations in the United States and by U. S. military commands outside the country.

Table 1 - Fresh and Frozen Fishery Products Purchased by Military Subsistence Supply Agency, 1956-60

1960		1959		1958		1957		1956	
Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
1,000 Lbs.	$1,000	1,000 Lbs.	$1,000	1,000 Lbs.	$1,000	1,000 Lbs.	$1,000	1,000 Lbs.	$1,000
22,917	11,839	22,651	11,624	22,511	12,850	23,452	12,080	26,610	13,413

Note: Actual total purchases are higher than indicated because local purchases are not obtainable.

Don't be apprehensive of doing business with MSSA because of the apparent size of its purchases. Remember that the figure cited is an aggregate or total one. As a matter of fact, in the fiscal year just passed, MSSA wrote over 173,000 contracts. In the year's procurement, that averaged out at about $4,000 a contract.

For example, the Agency bought $2,455 of "assorted items" and divided the business among five firms. This was typical of small purchases.

If smallness disinterests you, an example of an award to a small business concern in the other direction is a single contract for 20 million pounds of soybeans. Another contract was for $109,000 of roasted-and-ground coffee.

These examples describe the range of MSSA's business. They indicate that there is something for every small business firm. And there is, provided he is interested in going after and competing for it.

The key word in the last sentence is competing. Full competition is an overriding requirement in the Agency's procurement. All of MSSA's purchases are fully publicized and fully competitive. This is good for the taxpayers because fair and reasonable prices are obtained. This is also good for U. S. business because MSSA is a wholesale buyer operating like any other big-scale wholesaler. This means large quantity purchases. It calls for central warehousing. And it calls for a national distribution system to supply retail outlets. The net result is maximum effectiveness, efficiency, and economy. MSSA's "retailers" are the country's military installations, both here and overseas.

Table 2 - Canned Fishery Products Purchased by Military Subsistence Supply Agency, 1956-60

Product	1960		1959		1958 1/	1957 1/	1956 1/
	Quantity	Value	Quantity	Value	Quantity		
	1,000 Lbs.	$1,000	1,000 Lbs.	$1,000	(1,000 Lbs.)		
Tuna	3,610	1,613	3,698	1,672	5,884	2,711	3,334
Salmon	3,593	2,436	1,085	737	3,336	3,111	2,798
Sardines	147	61	1,051	177	253	215	236
Total	7,350	4,110	5,834	2,586	9,473	6,037	6,368

1/Value unavailable.

Note: Actual total purchases are higher than indicated because local purchases are not obtainable.

About the product. Food items bought by MSSA for the Services are comparable in variety and quality to those appearing on a typical American table. Generally speaking, the table-type items are called "issue" items. They are supplied to the Services for use in mess halls, dining halls, and galleys. A portion of issue products purchased also is resold to military personnel for consumption at home by their families. The Services also need many food items with special military characteristics for operational uses. Meeting this last need is most important to United States industry and to small businesses throughout our country.

This is the general background of MSSA. Its activities are similar to chain-store-type operations. Now, where is the so-called privileges for small business firms heretofore mentioned?

Underlying the privileges are the laws passed by Congress to aid small business firms. In carrying them out, the Department of Defense "sets aside" designated portions of its procurements for exclusive participation by small business concerns. MSSA applies the desire of the Congress to the military food procurement program in this manner.

How is this done? Let us illustrate.

MSSA, let us say, gets an order from the Army, Navy, Air Force, or Marine Corps for 100,000 cases of tuna. It announces to all interested U. S. suppliers that at a certain date it will make this purchase. To advance the small business interest, procurement may follow one of two courses: (1) it may be "totally set aside" for small business or (2) a portion may be "partially set aside" for exclusive participation by small business concerns. An obvious third method is to "open" the entire purchase to all businesses, large and small.

Total set asides are made when procurement officers are convinced that small business firms can supply the full requirement at fair and reasonable prices. Open procurement is utilized when the complete range of suppliers, small and large, is needed to fulfill Armed Forces' requirements.

If the bids received from small business concerns under the total set-aside plan are not fair and reasonable in relation to the prevailing market, the procurement is withdrawn and the item re-solicited from small and large business firms. In partial set-asides, awards to small business firms are made at the best award price obtained for the "unrestricted" portion of the procurement (obviously, this is made first). MSSA offers the set-aside portion only to the small business concerns (in priority of their original price offer) who offered on the unrestricted portion and whose offers were within 120 percent of the "unrestricted" award price. If MSSA's offer is not accepted by them, the partial set-aside preference is dissolved and the procurement reopened to all concerns.

It should be evident that the small business "privilege" is then, one of opportunity. It permits the small concern to participate in public business and to receive awards if its prices are fair and reasonable. Although designed to help small business firms, the privilege does not conflict with the best interests of the public.

Partial set-asides are effective when (1) awards on the open (unrestricted) portion of a procurement have been based on normal prices related to the current competitive market and (2) no small business firm has submitted a "token" opening offer to achieve subsequently an unfair advantage over other small business competitors eligible for set-aside awards. Failure by small business firms to accept awards at the highest prices paid on the unrestricted portion results in the purchase being opened to all bidders.

To keep pace with the dynamic, fast-moving American food business, MSSA has long followed most of the commercial day-to-day procurement practices. The Agency is not bound by the slower procedure of formal bid-openings. In line with practice in the food industry to obtain perishable foods (1) it uses the telephone, (2) its buyers operate in terminal markets with the same on-the-spot facility and responsibility vested with commercial purchasing agents, or (3) its buyers enter the fields during harvest seasons and there contract for portions or even entire crops. The desire to contact all qualified vendors who wish to sell to MSSA is common to all methods.

On-the-spot or sight-buying activities by MSSA usually involve less-than-carlot quantities. When carlots are rquired, MSSA sends a written "Notice of Intent to Purchase," called a NIP, to a nationwide mailing list. Offers from business firms first go to a MSSA regional headquarters for initial evaluation. There the low and responsive bids received are sent to a national desk where final evaluation against low and responsive bids from all regional offices is made to determine the award winner on the basis of full and free nationwide competition.

In every case of local or national buying, suppliers are made fully aware of MSSA's intent to buy. As stated, competititon is full and free. There is no "selected" or preferential list of suppliers. Contracts are awarded on the basis of the lowest price from responsive and responsible bidders.

Some small business firms have felt that there has been too little profit in doing business with MSSA. This is regrettable but, of course, MSSA cannot guarantee profits. Nevertheless, the Agency takes every measure and means to assure that each business firm gets fair and equitable consideration when contracts are awarded.

It is emphasized again the MSSA cannot choose or select its suppliers. Awards must be made to the responsive and responsible bidder whose offer is the low one. MSSA finds that the best interests of the offeror usually coincide with those of the U. S. Government. As indicated at the start, integrity is a two-way proposition.

There should be no misunderstanding about the competitive nature of the set-aside privilege. It is not a "this-is-for-us" small business subsidy. Set asides are made on the basis and in the belief that there are a sufficient number of small business competitors who have both capacity and experience to fulfill MSSA's contracts under full competition and at fair and reasonable prices.

One of the pitfalls most encountered by small concerns is failure to recognize that offers are evaluated by MSSA on (1) the bid price f.o.b. origin and (2) the cost of delivering the product from origin (i.e., the manufacturer's plant) to first destination. Transportation is an out-of-pocket cost to the taxpayer and must be computed in evaluating prices. This means that distant plants ordinarily have less chance to win the award than firms nearer to the designated site of delivery. Failure to realize this additional cost factor has caused some disappointment without comprehension of the reason.

Another complaint that MSSA hears from unsuccessful offerors is that they are unable to find out who won the award and the price at which it went. This information is available to those who submit offers or affirmatively indicate an interest. Awards for the larger contracts appear in the daily "Synopsis of U. S. Government Proposed Procurement, Sales and Contract Awards" published by the Department of Commerce. Information on smaller contracts is posted weekly at MSSA's regional offices. Furthermore, competing firms may call MSSA offices for information.

Note, however, that MSSA does not give out information concerning unsuccessful offerors and bids.

Historically, more than 50 percent of MSSA's business, in contracts and in dollars, has gone to small business. Yet, the Agency feels that there are still too few small business concerns supplying food to the Armed Forces. MSSA seeks continually to expand its procurement base by asking more firms to compete for the privilege, and the profit, of supplying food items to the Armed Forces.

To get started, the new applicant for military food business should apply to the regional MSSA headquarters nearest to him for a "bidders mailing list" application. It will be sent to him along with a check list of the items that MSSA buys. The prospective bidder may indicate on the list the items he wants to sell. The check list, along with the filled out application, should be returned to the office that sent it.

This action usually results in getting on a MSSA mailing list. Thereafter, and so long as it is interested, the concern will receive each pertinent Notice of Intent to Purchase sent out by MSSA. The NIP will tell him what MSSA is going to buy, when it will buy it, where, and how much. It also will contain information about the product and the manner in which it is to be packaged. It lists specifications which furnish details about product quality. Specifications are available at no cost to the supplier.

Products sold to the Government, and methods of processing as well, must comply with government standards and requirements. It is important, therefore, that NIPs and specifications be read and studied carefully. The offeror needs to have a complete knowledge of the item, its components (when applicable), and the method of packing required by the Government. Many performance failures have been due to a lack of knowledge or understanding of what was required.

This should not frighten the interested and qualified small business manufacturer. Government requirements usually are in close harmony with commercial standards and practices. Suppliers with a good industrial knowledge of an item usually have little difficulty in conforming production to any different or additional requirement that may be imposed because of military necessity or to provide a common basis for fair and free competition.

MSSA's military and civilian buyers and procurement officers at the ten regional headquarters and 20 affiliated field buying offices will be glad to provide additional information and explain further how to go about getting food business from the Armed Forces. The Agency continuously strives to simplify and to clarify its procedures so that small business firms not familiar with government procurement may readily and easily understand the what, when, and where of selling to MSSA. Many small business concerns, as has been said, have had little difficulty in getting military food business. Over 65 percent of 173,000 contracts MSSA issued in fiscal year 1960 went to small business firms. In dollars, this represented about 60 percent of the $675 million expended that past year by MSSA for food for the Armed Forces of the United States.

Nevertheless, MSSA still feels that there are many small suppliers who, when aware of the common-sense procedures as well as the opportunity to sell to MSSA, would like to go after military food business. Most who try are successful. The absence of complaints from them indicates their satisfaction with MSSA methods and also with the promptness with which it pays its bills.

If you are included among the American small business food suppliers not now doing business with MSSA, let this encourage you to write or phone to the nearest MSSA office indicating that you would like to do more business and want to do it with the MILITARY SUBSISTENCE SUPPLY AGENCY in meeting the food needs of your Armed Forces.

SEA TRANSPORTATION OF FROZEN FISHERY PRODUCTS

Taking into account both the bacteriological aspect and the economics aspect of the problem of transporting frozen fish by sea, the author is of the opinion that a temperature of -8° to -12° C. (18° to 10° F.) is most suitable for a trip of 2 to 3 weeks. ("Transport of Fish," General Fisheries Council for the Mediterranean Proceedings, 1957, 3 p.)

TRENDS AND DEVELOPMENTS

California

PELAGIC FISH POPULATION SURVEY CONTINUED:

M/V "Alaska" Cruise 61-A-2-Pelagic Fish: The coastal waters from Turtle Bay to Ensenada, Baja California, were surveyed (March 6-25, 1961) by the California Department of Fish and Game research vessel Alaska. The objectives were: (1) to sample spawning sardines to determine if there is a relationship between the spring spawners off southern California and central Baja California, and the genetically distinct groups which have been defined as "northern" and "southern" stocks; (2) to locate and sample fish from the transition zone between the two stocks to determine the extent of mixing; and (3) to transport live kelp (Macrocystis sp.) from Turtle Bay, Mexico, to southern California in conjunction with the Ocean Fish Habitat Development project.

Although persistent north-west winds hampered operations, 75 night-light stations were completed. Sardines were scarce. Not one sardine school was observed during 402 miles of night scouting nor was a single adult collected. The paucity of spawning sardines was confirmed by recent U. S. Bureau of Commercial Fisheries surveys which revealed a scarcity of sardine eggs and larvae in the same area.

Anchovies were abundant from Ensenada to Blanca Bay where they were taken at 9 night-light stations. In addition, 275 schools were observed while scouting. Several attempts were made to attract visually-located schools with the night light, but the fish avoided it in each instance.

Jack mackerel were present at 9 stations and Pacific mackerel at 6. Both were abundant in Turtle Bay where Mexican purse seiners were catching them during the daytime.

A gill net, set near the entrance of Turtle Bay, captured 8 California swell sharks (Cephaloscyllium uter), 1 gray smoothhound (Mustelus californicus), and one leopard shark (Triakis semifasciata). This catch extended the range of the swell shark on the west coast of Baja California about 40 miles southward from the San Benitos Islands. Swell sharks have been reported unreliably from as far south as Alcapulco, Mexico. Two large (146 mm. and 160 mm.) female dwarf perch (Micrometrus minimus) collected at San Martin Island may prove to be the largest ever recorded and were south of the previously reported range for this species.

About 75 kelp plants were transported from Turtle Bay to Santa Monica Bay, Calif., where personnel of the Department's Ocean Fish Habitat Development project transplanted them.

Sea-surface temperatures ranged from 61.9° F. (16.6° C.) at Cedros Island to 52.0° F. (11.1° C.) at Cape Colnett. Most readings were between 55° F. (12.8° C.) and 57° F. (13.9° C.).

Airplane Spotting Flight 61-3-Pelagic Fish: The inshore area from the United States-Mexican Border to Bolinas Bay, Calif., was surveyed from the air (March 11-14, 1961) by the Department's Cessna "182" 9042T to determine the distribution and abundance of pelagic fish schools. Intermittent low clouds made observation difficult along some portions of the central California coast, but complete coverage was possible south of Point Arguello.

More fish schools (1,061 anchovy and 13 sardine) were seen during this flight than were observed on any previous flight since October 1958 when 1,346 anchovy schools were counted north of Monterey Bay. All

but 6 of the schools seen during this month's flight were south of Santa Barbara.

Most of the anchovy schools (1,015) were in 6 school groups. At San Diego, 177 schools were observed along the Coronado Strand; 130 were between Torrey Pines and La Jolla; 231 were off Oceanside; 86 were between Newport Beach and Huntington Beach; 115 were off Point Magu; and 276 were near Port Hueneme. The schools varied in size from small, fragmentary spots close to shore to fairly large, dense schools in deeper water out to about one mile.

Sardines were observed in only two areas. There were 7 small schools two miles southwest of the Oceanside pier and 6 small spots north of Point Piedras Blancas.

Northbound California gray whales, 139 in all, were seen throughout the range of the survey.

Porpoise schools were observed four miles off Goleta Point, near La Jolla Point and near the city of San Clemente. The school near Goleta was very large, and contained hundreds of individuals; the other two were composed of 20-25 animals.

Killer whale (Grampus rectipinna).

In addition to the above marine mammals, four small killer whales were seen in Monterey Bay, about one mile off Moss Landing.

Airplane Spotting Flight 61-4-Habitat Development and Pelagic Fish: The coastal waters of southern California to Turtle Bay, Baja California, were surveyed (March 18-21 1961) by the Department's Twin Beechcraft N5614D. The survey was conducted to gather living plants of the giant kelp (Macrocystis) in Turtle Bay and transplant them into Santa Monica Bay, southern California. The variety of Macrocystis in Turtle Bay exhibits a resistance to warm water, and if it can be successfully introduced into the southern California area it may strengthen the local kelp during periods of warm water and increase the size and health of the local beds. Another purpose of the survey was to observe fish schools, where possible, from San Pedro to Turtle Bay.

The Department's research vessel Alaska was met on March 18, 1961 in Turtle Bay. Despite murky water and heavy surge, particularly outside Turtle Bay, the biologist-divers secured 37 sacks of kelp plants on March 19 and 20. The plants were taken from inside and outside Turtle Bay, in 25 to 50 feet of water. All sacks were submerged in the bait wells of the Alaska and on March 21, 8 were removed, placed aboard the airplane and flown to Torrance Airport. From there they were carried by car and boat to the Hermosa Beach artificial reef where all 8 sacks were tied onto the submerged streetcar by the divers. The top of each net sack was opened and the kelp stipes were allowed to trail into the water in a natural manner. The other 29 sacks of kelp were to be brought to Santa Monica Bay in the bait wells of the Alaska.

During the flight to Turtle Bay observations were made on fish schools along the coast. On March 18, during the flight south, 478 schools were observed. Of these, 467 were anchovy, 10 were probably sardine and one, observed south of Cape Colnett, was of unidentified large fish. A majority of the schools (436) were between the Mexican Border and Cape Colnett. The water in this area, along the shore to 3 miles at sea, was green in color. Thirty-seven schools were between Cape Colnett and Punta Canoas. South of Punta Canoas wind and clouds made further observations impossible. During the return flight March 21, a break in the clouds over Sebastian Viscano Bay revealed seven anchovy schools in the water below. Heavy clouds prohibited further observations until the plane was north of San Diego. In the area between Newport Beach and Laguna Beach, from 1 to 4 miles offshore, there were approximately 200 schools of mackerel or bonito.

A total of 9 gray whales, in two groups, was noted during the flight. All the whales were traveling northward. One group of 5 was south of Punta Descanso and the others were in Bahia San Quintin.

Airplane Spotting Flight 61-5-Pelagic Fish: The inshore area from the United States-Mexican border north to the Russian River was surveyed from the air (April 17-20, 1961) by the Department's Cessna "182" 9042T to continue the study of the distribution and abundance of pelagic fish schools.

In all, 185 schools were seen. Strong winds in central California and reduced visibility in southern California were at least partially responsible for the relatively small number tallied. Department research vessel personnel and commercial fishermen reported that anchovy schools were plentiful in some portions of the area surveyed.

Small school groups of anchovies were found one mile north of the Santa Monica pier (73 schools), and between Point Pinos and Carmel Bay (53 schools).

Sardines were seen in only one place, two miles southwest of Carpenteria, where six medium-size schools were counted.

While scouting Monterey Bay, 51 salmon trollers were counted. Most of these boats were working the area about three miles north-east of Point Pinos.

The water in the extreme inshore area from South Laguna to the Mexican border was very dirty and in some places the color was almost that of a typical "red tide" condition.

Note: Also see Commercial Fisheries Review, May 1961 p. 11.

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ROCKFISH STUDIED OFF SOUTHERN CALIFORNIA COAST:

M/V "N.B. Scofield" Cruise 61-S-1-Rockfish: The area around the islands of Santa Catalina, Santa Barbara, Anacapa, Santa Cruz, Santa Rosa, San Miguel, and San Nicolas was surveyed by the California Department of Fish and Game's research vessel N. B. Scofield to catch various species of rockfish (Sebastodes) at different depths for length, weight, maturity, food habits, age, and other studies. Other objectives were to collect ample series of doubtful species for detailed laboratory studies, and to experiment with rockfish tagging techniques.

Baited hand lines were used in shallow waters, and baited set lines in deep waters. Fishing was in depths of 40 to 1,200 feet, adjacent to, and between, the southern California islands. Twenty species of rockfish were taken, plus several other kinds of fish.

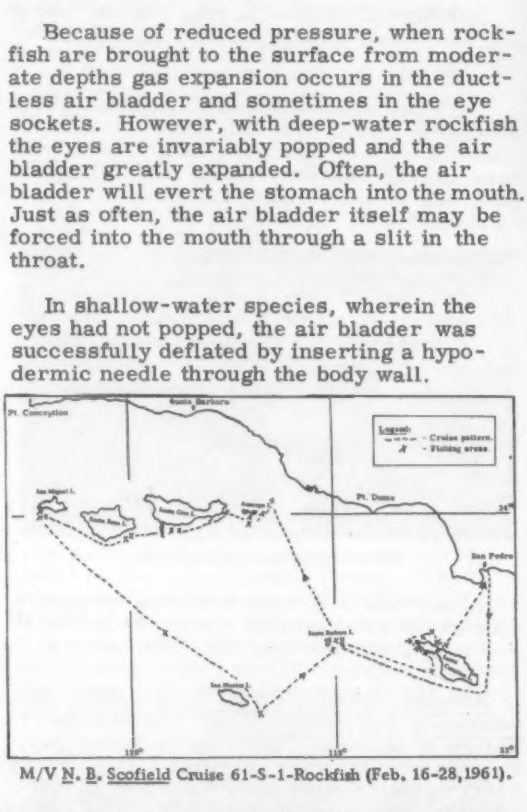
Length, weight, and maturity information was taken on all rockfish. Stomach contents were noted when they were not disgorged. Scales or otoliths were taken from certain species for age studies.

Large pink rockfish, Sebastodes eos, and whitebelly rockfish, S. vexillaris, were frozen for studies to determine their validity--if they are distinct from the greenspotted rockfish, S. chlorostictus, and the copper rockfish, S. caurinus, respectively.

Experiments were conducted to determine methods of tagging rockfish in waters of various depths.

Because of reduced pressure, when rockfish are brought to the surface from moderate depths gas expansion occurs in the ductless air bladder and sometimes in the eye sockets. However, with deep-water rockfish the eyes are invariably popped and the air bladder greatly expanded. Often, the air bladder will evert the stomach into the mouth. Just as often, the air bladder itself may be forced into the mouth through a slit in the throat.

In shallow-water species, wherein the eyes had not popped, the air bladder was successfully deflated by inserting a hypodermic needle through the body wall.



M/V N. B. Scofield Cruise 61-S-1-Rockfish (Feb. 16-28, 1961).

Methods were developed for deflating, anesthetizing, and tagging blue rockfish caught as deep as 230 feet. A 1:15,000

concentration of MS222 put blue rockfish under a proper level of anesthesia in 4 to 7 minutes. All specimens recovered, some after spending as long as 30 minutes in the solution. If the solution were applied directly to the gills with a syringe, a 1:750 concentration caused proper sedation in less than a minute.

Approximately 100 blue rockfish, S. mystinus, were deflated and placed in a live-bait tank aboard the N. B. Scofield. Of 50 that were tagged with a large, numbered, Petersen-type tag (for visual observations of individual fish), 38 survived. These, in addition to two whitebelly rockfish and a vermillion rockfish, were delivered to Marineland of the Pacific, for further observations.

A total of 42 blue rockfish, each bearing a plastic spaghetti streamer tag, were released at sea around the various islands.

In an experiment designed to tag deep-water rockfish, without bringing them to the surface, a detachable tagged-hook was used. This consisted of a fish hook with a numbered plastic disc fastened to the hook eye. The hook was attached to a fishing line, or a set line, by a thread that would break with a three-pound strain. Fish weighing a pound or less were retained, but larger fish broke the thread after accepting the baited hook. About 100 baited, tagged hooks were released at depths of 90 to 1,200 feet. Two hooked-tagged fish were recovered in the same areas where fishing releases were taking place. One was a 1½-pound treefish, S. serriceps, from a depth of 120 feet; the other a 6½-pound cow rockfish, S. levis, from 525 feet. If this method of tagging proves practical, movements of deep-water rockfish, as well as certain other fish, might be traced.

Cans--Shipments for Fishery Products, January-March 1961

Total shipments of metal cans during January-March 1961 amounted to 22,757 short tons of steel (based on the amount of steel consumed in the manufacture of cans) as compared with 22,023 tons in the same period a year ago. Canning of fishery products in January-March this year was confined largely to tuna, Gulf oysters, and Pacific and jack mackerel. Increased shipments of metal cans during January-March this year as compared with the same months in 1960 were probably due to an increase in the California pack of canned tuna.

Total shipments of metal cans during January-February 1961 amounted to 13,208 short tons of steel as compared with 13,609 tons in the same period a year ago.

Total shipments of metal cans during January 1961 amounted to 7,080 short tons of steel as compared with 7,538 tons in the same month a year ago. The decrease of about 6.0 percent in the total shipments of metal cans in January this year as compared with the same period of 1960 was probably due to the sharply lower packs of both Pacific and jack mackerel.

Note: Statistics cover all commercial and captive plants known to be producing metal cans. Reported in base boxes of steel consumed in the manufacture of cans, the data for fishery products are converted to tons of steel by using the factor: 23.0 base boxes of steel equal one short ton of steel.

Central Pacific Fisheries Investigations

ALBACORE TUNA TAGGING RETURNS INDICATE SINGLE POPULATION IN NORTH PACIFIC:

On the basis of tag recovery data, age and growth information, and distribution and size frequency data from the various fisheries, a model of the migration of albacore tuna in the North Pacific Ocean has been developed by biologists of the U. S. Bureau of Commercial Fisheries. This model, consistent with the hypothesis that there is a single population of albacore in the North Pacific Ocean, is:

A varying portion of the 2-, 3- and 4-year old fish and nearly all of the older fish in the United States fishery migrate westward each fall into the Japanese long-line fishery, and during the following spring, into the Japanese live-bait fishery. The remainder of the fish from the area of the United States fishery move westward to the mid-ocean waters of the North Pacific, some as far west as the fringe of the Japanese long-line fishing grounds. Those fish that do not move into the Japanese live-bait fishery return to the United States fishery the following

season. Thus, some fish may be available to the United States fishery for as many as 4 or 5 successive seasons.

Albacore enter the Japanese winter long-line fishery from both the United States fishery (westerly migration in the fall) and the Japanese live-bait fishery (easterly migration in late summer). Each spring, a large portion of these fish (age groups 2-5), migrate westerly from the long-line fishery grounds into the live-bait fishery, while a few separate and move eastward into the United States fishery. The larger adults (6-years or older) move southward from the winter long-line fishery into the tropical and subtropical waters to the spawning grounds of the North Pacific albacore population.

It appears that the major portion of the recruitment into the exploited stock (recruitment begins at age 2 and is completed at age 3) takes place in the eastern rather than the western North Pacific. There is a greater volume of migration of the commercial sizes of albacore in a westerly direction from the United States fishery into the Japanese fisheries, than vice versa.

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AREA SOUTH AND WEST OF HAWAII SCOUTED FOR SEASONAL SKIPJACK TUNA:

M/V "Charles H. Gilbert": As part of a long-term program of Central Pacific Ocean surveys planned by the U. S. Bureau of Commercial Fisheries Biological Laboratory at Honolulu with the object of learning more about the life and habits of the skipjack tuna (aku), the Bureau's research vessel Charles H. Gilbert completed a 5-week cruise on May 8, 1961. The particular purpose of the cruise was to locate concentrations of skipjack at some distance from the Islands prior to the beginning of the regular summer fishing season and thus to obtain information concerning the origin and migration routes of the schools which support the summer fishery in Hawaiian waters.

Aku schools were more abundant near Johnston Island and in an area about 150 miles south of Oahu than they were to the westward, between Kauai and French Frigate Shoals. In both areas most of the schools were composed of small fish. Near Johnston Island a number of skipjack were marked with plastic tags and released. Recapture of any of these marked fish in the Hawaiian aku fishery this summer would provide an important clue to the origin of the schools which migrate into Island waters seasonally, and commercial and sport fishermen are urged to report full details of any such catches to the Honolulu Laboratory.

Scientists aboard the vessel collected samples of skipjack blood in several areas covered by the cruise, including the first such samples from waters to the west of Hawaii. When these samples are classified into blood types and compared with blood collected from skipjack taken close to the Islands and with other samples from areas to the south, such as the Line Islands and the Marquesas, the results are expected to provide further clues to the relationships and movements of the central Pacific skipjack populations.

Drift bottles, for studying the direction and speed of ocean currents around the Hawaiian Islands, were released throughout the cruise. All professional and part-time "beachcombers" are requested to be on the lookout for the bottles, each of which contains a conspicuous orange-and-white striped card. The return of these cards (appropriately filled in) to the Biological Laboratory will be of great help. The finders will be informed of the date and place of release of the bottles they pick up.

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NEW TYPE GILL NET FOR SKIPJACK TUNA FISHING SHOWS PROMISE:

Fishery biologists and fishermen of the U. S. Bureau of Commercial Fisheries Biological Laboratory at Honolulu were encouraged by the results of three test operations carried out May 13-16, 1961, off Lanai and Waiane, Oahu, in which a gill net of monofilament line was used to catch skipjack (aku) tuna. The monofilament net, made of a clear, transparent synthetic fiber similar in appearance to the nylon leaders used by sport fishermen, was fished from the Bureau's research vessel Charles H. Gilbert along with an equal length of net made from conventional green-dyed nylon twine. Of the total of 326 skipjack tuna caught in the nets, all but 5 were in the monofilament portion.

The difference in visibility of the two kinds of net, as viewed from the underwater observation chambers of the research vessel, was very striking--the nylon net standing out conspicuously in the clear water, while the monofilament net was almost invisible to the human eye.

The strategy employed in the tests was to slow down the movements of a school of skipjack by chumming with live bait, set the net close to the school, and then throw additional live bait to induce a "feeding frenzy" that would overcome the skipjack's usual caution. It appeared to the observers that those fish which were not in such a state of frenzied excitement were to some extent aware of even the transparent monofilament net.

The gill net, which was about 1,200 feet long and 24 feet deep, could be hauled aboard the vessel in about 20 minutes by means of a hydraulic-powered device called a "Power-Block," and the 3-5 pound skipjack passed through the block along with the net without being seriously damaged.

The skipjack net fishing experiments were aimed at finding a method to enable Hawaii's sampan fleet to harvest skipjack more efficently and economically, so as to meet the competition of better equipped fishermen in other areas. The development program is only in the preliminary stage, and the test operations were made with a small net improvised from materials on hand. The results were however, considered encouraging as they indicated that skipjack can be taken in monofilament gill nets in numbers large enough to make further experimentation possible and worthwhile. The Laboratory plans to construct a longer, deeper net entirely of monofilament web, using funds made available especially for this purpose. If proposed State financial support, presently pending in the Legislature, is forthcoming, this type net will be thoroughly tested aboard a sampan of the skipjack tuna fleet, under the actual conditions which the method will have to meet in order to be of help to the Hawaiian tuna industry.

Federal Purchases of Fishery Products

DEPARTMENT OF DEFENSE PURCHASES, MARCH 1961:

Fresh and Frozen Fishery Products: For the use of the Armed Forces under the Department of Defense, about 1.6 million pounds (value $701,000) of fresh and frozen fishery products were purchased in March 1961 by the Military Subsistence Supply Agency. This was lower than the quantity purchased in February 1961 by 10.0 percent and 18.9 percent under the amount purchased in March 1961. The value of the purchases in March this year was lower by 23.9 percent as compared with February and 35.2 percent less than for March a year earlier.

Table 1 - Fresh and Frozen Fishery Products Purchased by Military Subsistence Supply Agency, March 1961 with Comparisons

QUANTITY				VALUE			
March		Jan.-Mar.		March		Jan.-Mar.	
1961	1960	1961	1960	1961	1960	1961	1960
(1,000 Lbs.)				($1,000)			
1,568	1,934	5,167	5,298	701	1,081	2,547	2,730

During the first 3 months of 1961 purchases totaled about 5.2 million pounds (valued at $2.5 million)--a decrease of 1.5 percent in quantity and 6.7 percent in value as compared with the same period in 1960.

Prices paid for fresh and frozen fishery products by the Department of Defense in March 1961 averaged 44.7 cents a pound, about 8.1 cents less than the 52.8 cents paid in February and 11.2 cents less than the 55.9 cents paid during March last year.

Canned Fishery Products: Sardines were the only canned fishery product purchased for the use of the Armed Forces during March this year. In the first three months of 1961, purchases of canned tuna were up 7.6 percent and canned sardines were up 30.4 percent as compared with the same period in 1960. No canned salmon was purchased during January-March 1960 or 1961.

Table 2 - Canned Fishery Products Purchased by Military Subsistence Supply Agency, March 1961 with Comparisons

Product	QUANTITY				VALUE			
	March		Jan.-Mar.		March		Jan.-Mar.	
	1961	1960	1961	1960	1961	1960	1961	1960
	(1,000 Lbs.)				($1,000)			
Tuna	-	252	1,365	1,269	-	122	603	573
Salmon	-	-	-	-	-	-	-	-
Sardine	24	15	60	46	12	6	29	20

Note: Armed Forces installations generally make some local purchases not included in the data given; actual total purchases are higher than indicated because local purchases are not obtainable.

* * * * *

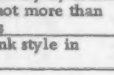
VETERANS ADMINISTRATION REQUIREMENTS FOR CANNED FISH FROM 1960-61 PACK:

Early this year the Veterans Administration announced its estimated requirements of various canned food products, including fishery products (table 1).

Table 1 - Veterans Administration Requirements for Canned Fish from 1960-61 Pack

Canned Product	Can Size	Quantity (Dozen Cans)
Salmon, red, or sockeye	1 lb.	17,517
Salmon, skin and backbone removed	4 lb.	2,802
Salmon, red or sockeye, sodium content restricted to not more than 60 mg. per 100 grams	1/2 lb.	8,211
Tuna, light meat, chunk style, sodium content restricted to not more than 60 mg. per 100 grams	1/2 lb.	9,122
Tuna, light meat, chunk style in vegetable oil	4 lb.	5,828
Sardines	1 lb.	5,212

Items listed are purchased by the Marketing Division for Subsistence, Veterans Administration Supply Depot, P. O. Box 27, Hines, Ill.



Fish Flour

DEVELOPMENT FOR HUMAN CONSUMPTION SUPPORTED BY SENATORS FROM MASSACHUSETTS:

With reference to the development of fish flour for human consumption in the United States, the Senators from Massachusetts made statements before the Senate on May 18 which appeared in the Congressional Record of that date. In addition, inserted in that publication on the same date by Senator Leverett Saltonstall was an editorial which appeared in the May 15, 1961, issue of the New Bedford Standard-Times and by Senator Benjamin A. Smith II a letter received from Interior Secretary Steward L. Udall.

In part, Senator Saltonstall pointed out:

"... I am happy to report to the Senate a development which should help considerably in solving the problems of the fishing industry, and which may also be a significant aid to U. S. foreign policy."

He went on to state that at New Bedford, Mass., a fishery products firm is converting whole, fresh fish into a fish flour that will be an important supplement to human food. Then he added:

"It can be sold for only 15 cents a pound. It appears to be the cheapest source of animal protein in the world. It can be stored for long periods of time without refrigeration. It can be mixed with grains to give undernourished peoples a balanced diet. We are confident that we have in this product a helpful answer to widespread hunger adjacent to oceans teeming with fish.

"For several months I have been working with my colleague from Massachusetts, Senator Smith, Senator Douglas, of Illinois, Congressman Keith, of the New Bedford District, Mayor Lawler, and the members of the New Bedford City Council to secure full public approval of this unique product.

"We are asking this body to add $200,000 to the budget of the Bureau of Commercial Fisheries to speed research on the product, to study other processes, to investigate the possibility of manufacturing this substance aboard trawlers while they are still at sea, and to check all the possible uses for human food.

"I request that an editorial entitled "Fish Flour Fills Need," be printed in the body of the RECORD at the end of my remarks. This editorial is dated May 15, 1961, and it appeared in the New Bedford Standard-Times. This is good evidence of the fine community support which is available to this unique Massachusetts enterprise ...."

In part, Senator Smith added:

... "At a recent worldwide conference in Rome it was estimated that 500 million people suffer from the type of protein deficiencies which small, inexpensive dosages of fish flour in their diet could cure. Mr. George McGovern, director of the food-for-peace program has expressed considerable interest in it.

"An expansion of the sales of this product would also be of enormous benefit to the ailing American fishing industry....

"I would also like to place in the RECORD a letter which I received recently from Secretary of the Interior Udall. This letter, I feel outlines well the merits of fish flour and the arguments in favor of its being sold worldwide. It also tells of some of the obstacles facing the present fish flour program. I am in thorough agreement with the Secretary's remarks on these problems...."

Secretary Udall's letter as inserted in the Congressional Record follows:

UNITED STATES
DEPARTMENT OF THE INTERIOR
Office of the Secretary
Washington, D.C.

May 12, 1961

Hon. Benjamin A. Smith II,
U. S. Senate,
Washington, D. C.

Dear Senator Smith:

Thank you for your letter of April 26, concerning the Rome fish meal conference and fish flour. It is indeed encouraging that the prices of fish meal are now on the rise.

We were particularly pleased to learn of your interest in fish flour. It is our feeling, too, that fish protein concentrate offers tremendous potential in feeding hungry people all over the world. We in the Department recognize that such a product cannot, in all conscience, be sold abroad until approval for its use in America is first obtained from the Food and Drug Administration.

Mr. Donald McKernan, Director of our Bureau of Commercial Fisheries, is working closely with Mr. Harold Putnam, counsel, Senate Select Committee on Small Business, in an attempt to have Food and Drug approve the interstate marketing of fish flour for domestic human consumption. Mr. George Larrick, Commissioner of the Food and Drug Administration, in reply to our formal request for approval of fish flour, stated whole fish flour to be a product classed as adulterated under section 402(a) (3) of the Federal Food, Drug and Cosmetic Act. The Food and Drug Administration's rejection of fish flour is based on their decision that it consists, in whole or part, of filthy material. Their view is that heads, tails, viscera contents, etc., of large whole fish constitute filthy matter in that they are "esthetically objectionable" to the consumer.

We in the Department disagree with the Food and Drug's position on this matter. It is our feeling that these so-called esthetically objectionable components of fish are either removed or else totally lose their identity during processing into fish flour. A direct analogy exists in the preparation of gelatin made from beef hoofs. Here the raw materials used have the same esthetic objections as whole fish. No one would seriously affirm that all traces of any objectionable materials are removed, yet the product is marketed and widely used. Another interesting point is that millions of pounds of whole or headed sardines are consumed annually in this country. This seafood, with its viscera and tails intact, is both delicious and highly nutritious.

Since the first of the year, Mr. McKernan and representatives of his staff have had several meetings with officials of the U. S. Food and Drug Administration to encourage them to change their position on this matter. We have also prepared a standard of identity that will permit production of only the highest quality fish flour. Despite these efforts, however, the Food and Drug Administration has not changed its original position on the use of fish flour. It is our understanding that Secretary Ribicoff is requesting the Food and Drug Administration to hold public hearings to consider this matter. At that time we will again present our views regarding approval of fish flour.

Another problem is the absence of a suitably low-cost method of producing a uniformly high quality fish flour. It is the opinion of our scientists and those of the World Health Organization, Food and Agriculture Organization and the United Nations Children's Fund that no truly satisfactory method is known to exist for production of an inexpensive and highly nutritious fish protein concentrate. Comprehensive engineering and product utilization research is needed before we can produce a fish flour that we can use to feed the undernourished peoples of the world.

The Department feels that development of a suitable process for producing fish flour would be in the best interest of our country, both in helping the fishing industry and in furnishing a high quality animal protein concentrate to our neighbors in the underdeveloped countries. Such a program as this would appear to dovetail well into President Kennedy's food-for-peace plans and to further improve our social-political relations around the world.

The Department does not yet have a formal research program on fish flour, but is is hoped that we will be able to initiate one in the very near future.

Sincerely yours,

Stewart L. Udall,
Secretary of the Interior

Frozen Foods

NEW TIME-TEMPERATURE INTEGRATOR EFFECTIVE TESTING DEVICE:

A device that measures and integrates time and temperature to maintain quality in frozen foods has been developed by scientists of a Minneapolis firm. The miniature device, called a time-temperature integrator, tells the time-temperature experiences of frozen foods during various stages of handling and storage. It operates by means of electrochemical action and is about the size and shape of a cigarette, weighing only a fraction of an ounce. In use, it is simply placed with packages of frozen food.

The industry is still trying to determine how best to employ the tiny device. The firm's vice president of research said the U. S. Army Quartermaster Corps, which assisted in early stages of development, has tested 2,000 early models of the integrator with favorable results, and plans to test prototype production models this summer.

The integrator senses and records time and temperature as an integral function. The combined information is shown on a scale that is read as easily as a scale on an ordinary thermometer.

The firm's research specialist emphasized that the integrator does not measure food quality directly. It produces a time-temperature exposure reading that is consistent with data compiled by the U. S. Department of Agriculture on the deterioration rates of various frozen foods at different temperatures.

"This data shows," he said, "that frozen food maintains quality well at low temperatures (0° F. or below), but it becomes increasingly difficult to maintain quality at higher temperatures.

"Some foods that would maintain top quality for a year at 0° F. would suffer appreciable quality loss in a few months at 10° or in a few days at 20° "

He said that devices previously available were simply temperature indicators. This was of no value if it was not known how long the food remained at a certain temperature--such as above zero degrees.

The device can show the type of handling that foods have received and indicate when a laboratory quality check should be made. Also, it can be used to determine which lots of food should be moved from inventory early because of the amount of quality reserve left.

The new indicator is an outgrowth of three years of research by the firm's scientists in the field of electrochemistry. It is being produced on a pilot basis at the research center, which is making it available to the frozen food industry for experimental uses.

The integrator has no moving parts, no external wiring or power sources, and requires no special calculations. It is completely sealed in plastic and is durable enough to be packed in with most frozen food packages without additional protection. After use it is discarded.

Heart of the device is a glass tube filled with a special solution, the nature of which is not disclosed. Around this tube is wrapped a specially treated yellow paper sleeve.

At the ends of the paper are two metal electrodes of different material and these are connected by a copper ribbon. The entire assembly is sealed in a plastic tube.

It operates like a tiny electrolytic battery. To start its action, the indicator is squeezed with a special type of pliers furnished by the manufacturer of the device. This breaks the capsule of solution inside.

The solution wets the yellow paper and connects the two dissimilar metal electrodes, allowing an electrochemical reaction to start.

The reaction causes the yellow paper to turn red, beginning at one electrode and moving toward the other. The speed with which this occurs is dependent on temperature. The movement is always in the same direction. Cooling at a lower temperature merely slows the movement and will not cause it to back up.

In the current models, the red zone moves the full length of the scale in about 20 days at 20° F., two months at 15° F., six months at 10° F., and more than one year at -0° F.

Above 20° F., the indicator is designed to operate especially fast. At 25° F., the indicator will travel full scale in a couple of days.

The device may be of interest to the fishery industry, and might possibly be used as an indicator to determine the deterioration rates of fishery products at different temperatures while in cold storage, in transit, or in retail cabinets. (Food Field Reporter, March 29, 1961.)

Fur Seals

PRICES FOR ALASKA SEAL SKINS DROP AT SPRING 1961 AUCTION:

The spring 1961 auction sale of U. S. Government and other foreign-produced fur seal skins was held at the processing plant at St. Louis, Mo., on April 20 and 21, 1961. Representatives of the Canadian Department of Fisheries and the Japanese Government also attended the sale.

Sales for the United States-owned seal skins totaled about $1,950,000. The average price for all the conventionally-processed Alaska seal skins declined 14 percent to an average of $87.88. The United States share of the skins was sold as follows: Black from $128 to $69 per skin for an average of $93.33, a decline of 8.7 percent from the October 1960 sale; Kitovi, from $138 to $57 for an average of $87.20, a decline of 17.2 percent; Matara, from $118 to $58 per skin for an average of $83.57, a decline of 18.3 percent. The decline in average prices was generally expected, due to a general decrease in the prices of other high-quality furs. However, a disappointment was experienced in the sale of the sheared female or "Lakoda" skins. The average price for 10,468 of those furs was only $11.99 as compared to $36.05 at the fall 1960 sale when those skins were first presented to the fur trade. At the current sale, the Lakodas were divided into four classes or grades, the first two grades bringing a much higher price than the last two grades. Prices ranged from $61 for the largest grade I skins to $3.50 for the smaller grade IV skins. Of the female skins processed, about 25 percent were rejected as unfit for sale.

The fall auction of Alaska fur seal skins is tentatively scheduled to take place on October 12-13, 1961.

Note: Also see Commercial Fisheries Review, Dec. 1960 p. 32.

Gear

INSTRUMENT DESIGNED TO RECORD DEPTH OF PURSE SEINE AS FUNCTION OF TIME:

Two scientists from the U. S. Bureau of Commercial Fisheries, San Diego, California, Biological Laboratory were aboard the commercial purse seiner West Point during a trip which extended from April 3 to April 27, 1961. This was the second of two trips made with the purpose of evaluating the use of sonar to locate and follow schools of tuna. Examination of the records and the evaluation are under way and will be reported later.

During the second trip, tests were made of an instrument designed by one of the scientists to record the depth reached by the seine (430 fathoms long and 42 fathoms deep) as a function of time. This device was attached to the lead line of the net. The results must be considered preliminary, since this was the first model put into use and it was not accurately calibrated for depth. The first test revealed that the lead line took about six minutes to reach depth. The depth recorded in this case was about 26 fathoms. Further observations along this line were made in June. Several of the instruments will be available and can be attached to various parts of the net.

* * * * *

NEW CONVOLUTED FLOAT DEVELOPED TO REPLACE DAMAGED PURSE-SEINE FLOATS:

A Seattle, Wash., inventor has developed a convoluted (coil-spring type) float that has attracted considerable attention on the part of purse-seine fishermen. The new float, which has been patented, is expected to be used to replace damaged floats easily without the time-consuming threading method

now employed in replacing floats on many purse seines. The new floats are not yet on the market. (Fisherman's News, April 20, 1961.)

Great Lakes

LAKE TROUT PLANTING PROGRAM FOR UPPER GREAT LAKES FOR 1961:

An estimated 1,322,000 yearling lake trout will be planted in Lake Superior from Michigan, Canadian, and Wisconsin hatcheries during the latter part of May and early June as part of a broad, long-range program to revive the lake trout fishery of the upper Great Lakes.

Plans coordinated by the Great Lakes Fishery Commission are to release some 560,000 yearlings from State and Federal hatcheries in Michigan. Canada will release about 506,000 lake trout while Wisconsin will release 255,700. These fish will not become sea lamprey targets for at least several years after being released because of their small size. Most of the planting stock will be made up of one-year-olds between 5 and 6 inches long. Although final results will not be known until 1962, early studies raised hopes that the U. S. Bureau of Commercial Fisheries scored a success toward control of the sea lamprey in tributary streams of Lake Superior where the chemical treatment program was completed in the fall of 1960.

The State of Michigan's planting program calls for 120,000 yearling lake trout to be released in Whitefish Bay. Some 202,000 yearlings will be released in Keweenaw Bay, while the Munising area will receive 70,000 young trout. Stock for these plantings will come from the U. S. Fish and Wildlife Service hatchery at Pendills Creek. Lake trout to be released in Keweenaw Bay were reared from eggs collected in Crystal, Glen Higgins, Elk, and Torch lakes during the fall of 1959.

Another 120,000 of the Federal hatchery's trout will be transferred to Wisconsin and combined with that State's releases in the Bayfield area of Lake Superior. Some 48,000 trout will be taken from Wisconsin's Conservation Department Watersmeet hatchery for an experimental planting in the Ontonagon area.

In addition to the Lake Superior plantings, approximately 95,000 lake trout were scheduled to be released during early May in Lake Michigan, offshore from South Point near Charlevoix. Planting stock for this release was purchased from Illinois, and reared at the Fish and Wildlife Service Charlevoix hatchery.

The planting is the fourth in a series of experimental releases to learn more about the distribution and movements of hatchery-reared lake trout in Lake Superior, and to determine how long these fish can survive before being attacked by sea lampreys.

Hopes of launching a large-scale lake trout stocking program in Lake Michigan are contingent on findings of this study. All fish released will be fin-clipped to aid research.

Great Lakes Fishery Investigations

LAKE ERIE 1961 FISH POPULATION SURVEY CONTINUED:

M/V "Musky II" April 1961: Operations of the U. S. Bureau of Commercial Fisheries research vessel Musky II on Lake Erie began in early April with trawl tows at Stations No. 4 (East Harbor) and No. 5 (Sandusky Bay). The rather uniform catches consisted mostly of yellow perch and spot-tail shiners. As expected, the bay station produced a larger variety of species and included a greater number of the more common fish.

Yellow perch of the 1959 year-class were quite abundant. Their lengths varied between 5.5 and 8.3 inches and averaged 6.9 inches. Yearling perch were taken in lesser numbers. They averaged 3.5 inches in length; 0.5 inches shorter than the members of the 1959 year-class at this time a year ago. One out of three of the yearling males was sexually mature. Only an occasional two-year-old male was found to be immature whereas over 50 percent of the two-year-old females taken were undeveloped. In general, female perch ran a bit larger in size than males of the corresponding year class.

Data were obtained on other commercial species including white bass, sheepshead, channel catfish, and smelt. Very few yearling smelt have been observed thus far in spite of an apparently successful hatch last year.

A more intensive study has been initiated to follow the development of dissolved oxygen depletion and related phenomena in Lake Erie. The vessel and crew were used during alternate weeks of the month for this purpose. Nannoplankton and bottom samples were collected in addition to regular water samples for later analyses in determining contents and concentrations of various elements. Water temperatures of the lake in the Sandusky area averaged 39° F. at the beginning of April, increasing to about 46° F. by the end of the month. Dissolved oxygen concentrations ranged quite high, showing the lake to be well saturated at this time of year.

Scale samples and measurements of major species were also collected during the month of April from commercial landings at the following ports: Monroe, Michigan; Bono, Sandusky, Vermilion, and Ashtabula, Ohio. These collections will be supplemented with samplings from Wheatley, Ontario; Erie, Pa.; and Dunkirk, N. Y., which are being taken by biologists of neighboring state and provincial agencies. Samples from at least 150 net-run specimens of each of the seven major species (at each port) make up these collections.

The spring commercial catches of the more select species were not heavy. Few blue pike, whitefish, and ciscos were caught. Good landings of yellow-pike were rather spotty. While the larger yellow-pike were taken in greater quantity than anticipated, the 1959 year-class usually dominated the catch. These two-year-olds, averaging about 15-16 inches, have reached the "borderline" category. Many can be marketed either as No. 2's or 1's depending on price and demand.

The hatch and survival of young yellow-pike in 1960 was considered poor. However, commercial fishermen are now reporting varying numbers of 8- to 11-inch yellow-pike in their lifts. The reports are encouraging. Even so, the survival of the 1960 year-class cannot begin to approach that of the 1959 year-class which is not believed to be exceptionally high as compared to years of former abundance.

In Ohio waters, the sorting of the two-year-old yellow perch from trap net catches presented somewhat of a problem. The vast majority of the perch were well below the $8\frac{1}{2}$-inch minimum size limit. Normal growth, however, should place many of them in the "keeper size" toward the end of the year.

Large numbers of sheepshead were available for the taking. Some fishermen were landing them while others said they could not handle them until a higher price and a steadier market was assured.

Note: Also see Commercial Fisheries Review, June 1961 p. 23.

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RESEARCH VESSEL "CISCO" PROGRAM FOR 1961:

The recently developed trawl fishery for chubs and the anticipated rehabilitation of the lake trout in Lake Michigan make it important that an accurate estimate of the present chub populations be obtained, since it will be desirable to know what changes, if any, these developments will bring about. During 1960 the U. S. Bureau of Commercial Fisheries research vessel Cisco, by systematically fishing standardized gill nets and trawls, was able to obtain what is thought to be a reasonably good basis for future comparisons of chub populations in southern Lake Michigan. In 1961 the same program will be carried out in the northern portion of the lake. The standard gear (nylon gill nets of 9 mesh sizes from $1\frac{1}{4}$- to 4-inch mesh totaling about $\frac{1}{2}$-mile per gang, and bottom trawls of a type used by Lake Michigan chub fishermen) will be fished mostly off Frankfort, Charlevoix, and Manistique, Mich., and Sturgeon Bay, Wis. Although the primary interest will be in chubs, other species, especially the recently stocked lake trout, will also be of concern.

Cisco, research vessel of the Service's Great Lakes Fishery Investigations.

A second objective during 1961 will be to compare present chub populations with those of 1955. The identical linen gill nets which were set off Charlevoix, Manistique, and Ludington, Mich., in 1955 will be set in the same manner as to location, depth, and time of year, in 1961. A similar study off Grand Haven, Mich., in 1960 revealed that in the

intervening years since 1954 there had been a noticeable change to a higher proportion of bloaters among the chub stocks of that area.

The 1961 program will also include experimentation with a 40-foot modified British Columbia midwater trawl. The trawl will be equipped with a depth and temperature telemetering unit. The primary concern will be to explore its possibilities as a biological collecting device, but its potential as a commercial chub fishing net will also be examined.

Limnological collections and observations will be made each cruise at six stations on transects between Charlevoix and Manistique and between Frankfort and Sturgeon Bay.

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SEA LAMPREY CONTROL PROGRAM FOR 1961 UNDER WAY:

The sea lamprey control unit of the U. S. Bureau of Commercial Fisheries Great Lakes Fisheries Investigations started the 1961 field work on both Lake Superior and Lake Michigan in March. Eighty percent of the electrical barriers to be operated on Lake Superior were activated by March 31, 1961. The chemical control unit had treated only one small Lake Michigan tributary, but continued to make progress in surveys of sea lamprey streams and in bio-assays to learn the effects of larvicides in water from different tributaries.

Hawaii

SKIPJACK TUNA LANDINGS ABOVE AVERAGE FOR FIRST FOUR MONTHS OF 1961:

Landings of skipjack tuna in Hawaii during April 1961 were estimated to be 680,000 pounds, about 130,000 pounds above the 12-year (1948-59) average. Approximately 10 percent were fish under 8 pounds, 45 percent 8 to 15 pounds, and 45 percent between 15 and 25 pounds in weight. Nineteen vessels were fishing during April with an average catch of 35,800 pounds per vessel, over 8,500 pounds above the average for the preceding 10 years.

Total landings for the first four months of 1961 were estimated to be 1,815,000 pounds, 578,000 pounds above average. A large part of this increase was attributed to March landings, which were more than twice the average.

Bait (nehu) was quite scarce during early April, but was fairly easily obtained by the end of the month.

Inspection of Fishery Products

FISHERY PRODUCTS INSPECTION MEETING HELD IN WASHINGTON:

A day's meeting, open to all interested in fish and the fishing industry--producer, processor, distributor, consumer--was scheduled by the U. S. Department of the Interior's Bureau of Commercial Fisheries for June 9, 1961, in Washington, D. C.

The purpose of the meeting was to discuss the Department's inspection program for fishery products, to consider new approaches which will make inspection services available to small industry groups, and to explore the possibilities of establishing quality standards and inspection services for fresh fish. A prior meeting was scheduled for June 8 primarily for representatives of firms now using the Department's continuous inspection service.

The Bureau of Commercial Fisheries has been offering its fishery products inspection services for three years. Now it seeks to determine whether or not the program as originally designed is satisfying the needs of the consumer and of the many diverse segments of the fishing industry.

The Bureau believes that this can best be accomplished by meeting with the management of industry and other organizations to discuss existing problems and future plans for inspection activities.

Irradiation Preservation

IRRADIATION RESEARCH PROMISES LONGER TERM SHELF-LIFE FOR FOODS:

A recently installed irradiation facility at Oregon State College will be used in studies to make possible long-term storage of present short-shelf-life food items. According to the College, sterilization by radiation offers the first promising new principle of food sterilization since the discovery of the canning technique in 1809.

One of the College's professors of chemistry who is also chairman of the College's Radiation Safety Committee, said that with the new $20,000 cobalt irradiation facility, it will be possible for the College's scientists to subject focus to 3,000-500,000 roentgens of radiation an hour.

By using smaller doses of irradiation (radio-pasteurization), the bacterial population of micro-organisms can be reduced 90-99 percent without causing undesirable changes in food.

In the past years, the College has done considerable irradiation research on meats and seafoods. This research will be expanded and other work on genetic changes in insects, irradiation damage to plastics and other materials, and radiation decomposition of chemicals will be started.

The cobalt irradiation instrument is about $3\frac{1}{2}$ feet high and $2\frac{1}{2}$ feet in diameter. For safety, the cobalt-60 irradiation source is shielded with one foot of lead. The radioactivity is in 12 cobalt pencil-like rods measuring a half-inch in circumference and six inches in length.

Some research has already been done on irradiation of fishery products. It is hoped that new developments in this field will eventually result in extending the shelf-life of fishery products. (Food Field Reporter, March 27, 1961.)

King Crab

KING CRAB TAG-RETENTION STUDIES STARTED:

Using the chartered vessel Stag, a king crab tagging study in Tutka Bay, Alaska, was started early this year by U. S. Bureau of Commercial Fisheries biologists from the station at Kasitana Bay. For the king crab tag-retention study, a total of 1,100 crabs were tagged; 1,000 with loop tags and 100 with dart tags. This population of crabs is semi-isolated, which is particularly suited to tag-retention experiments.

Marketing

EDIBLE FISHERY PRODUCTS MARKETING PROSPECTS, SPRING-EARLY SUMMER 1961:

United States civilian per capita consumption of fishery products was about the same this past winter as in winter 1960, and was expected to continue close to the year-earlier rate in the next few months. The average retail prices of fishery products were noticeably higher this January-March than last. Average prices for these foods in the next few months were expected to remain well above the year-earlier level.

Supplies of edible fish and shellfish this spring and early summer will likely be at least as large as a year earlier. Commercial landings, now on the seasonal upturn, were expected to reach a peak around mid-year. During the first quarter of 1961, landings were well above those of the same part of 1960. Imports of fresh and frozen fishery products, which were noticeably higher this January-March than last, were likely to continue above the year-earlier level in the next few months, while exports might remain lower.

Stocks of food fish and shellfish were close to the low point of the year. Holdings of the frozen products were almost 7 percent higher this April 1 than last. They were expected to increase seasonally in the months ahead. Packers' stocks of the canned products were slightly higher at the beginning of this year than on the same date in 1960. They were expected to continue to decline seasonally until the 1961 canning season is well under way in late spring and summer.

This analysis appeared in a report prepared by the Agricultural Marketing Service, U. S. Department of Agriculture, in cooperation with the Bureau of Commercial Fisheries, U. S. Department of the Interior, and published in the former agency's May 9, 1961, release of The National Food Situation (NFS-96).

Maryland

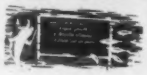
NEW "NATURAL RESOURCES INSTITUTE" RESPONSIBLE FOR FISHERIES RESEARCH: A new natural resource agency was forged when Maryland's Governor signed a bill uniting the State Department of Research and Education with the University of Maryland, thus joining the State's top efforts in research and education on natural resources. Effective June 1, 1961, the former department will be known as the Natural Resources Institute of the University of Maryland.

The Institute will continue to conduct a comprehensive research and educational program covering fisheries of marine and fresh waters, game, forestry, pollution problems, and related fields. It will work closely as part of the Board of Natural Resources with the agencies responsible for managing the natural resources, and will specialize in research for the Game and Inland Fish Commission, Tidewater Fisheries Commission, Water Pollution Control Commission, and the Department of Forests and Parks.

Dr. L. Eugene Cronin, who has directed the Department of Research and Education since 1955, will serve as first Director of the new Institute. Commenting on the change in status, Cronin says, "This new relationship provides an excellent opportunity for further improvement in the quantity and quality of Maryland's efforts to protect and develop her natural resources. It is good that the Institute will remain part of the Board of Natural Resources and the primary research agency on many of the problems facing the management agencies. We will gain, and the State will gain, by having the many specialists and facilities of the University more available to assist on these problems. I think the new Institute can conduct a strong program of highly practical research, undertake the broad and continuing basic studies which are essential if practical research is to be successful, and aid in the education of the public and of specializing students."

The new Natural Resources Institute can trace its history to the founding of the Chesapeake Biological Laboratory at Solomons Island, Md., in 1929. It was established by the Conservation Department in close association with the University of Maryland and directed by Dr. R. V. Truitt until 1955. This laboratory has the distinction of being the oldest state-supported marine biological laboratory in continuous use on the East Coast.

In 1941 the State Legislature created the Department of Research and Education, incorporating the Laboratory into a broader natural resource program, including research in inland resources, wildlife, freshwater fish, forestry, and conservation education. At present, marine research is centered at Solomons, the inland resources and conservation education divisions are located in Annapolis, and a new Western Maryland center will be established in the near future.



North Atlantic Fisheries Exploration and Gear Research

COMPARISON STUDIES CONTINUED OF STANDARD MANILA OTTER TRAWL WITH ONE CONTAINING POLYPROPYLENE PARTS: M/V "Delaware" Cruise 61-6: Additional tests of an experimental otter trawl were made during an April 14-25, 1961, cruise of the U. S. Bureau of Commercial Fisheries exploratory fishing vessel Delaware. The experimental net, in which the top wings, top belly, and square were constructed of 42-thread-cotton-equivalent-diameter size polypropylene fiber twine, was found to catch more fish than the standard No. 41 manila-twine trawl with which it was compared. The results are in agreement with those of a previous cruise (61-2) when a similar net with upper sections of a lighter polypropylene twine caught 66 percent of the trip's total fish, while the conventional net caught 34 percent. During the April cruise, the polypropylene-equipped net took 57 percent of the fish as compared to 43 percent taken with the all-manila

net. Equal numbers of tows were made with each type of net during both cruises.

Instrument used to take internal mesh measurements (M/V Delaware Cruise 61-6).

A total of 110 1-hour tows was conducted with the two trawls during the cruise in a confined area (3 by 12 miles) on Georges Bank. The trawls were rigged to the same measurements using the same rollers and doors, and both were fished on the starboard side. The trawls were changed every 2 tows and operations were continued on a 24-hour per day basis. Each individual fish of commercially-valuable species was counted and measured.

Catch Results, M/V Delaware Cruise 61-6 (108 tows) 1/

Species	Catch			Percentage of Catch	
	Polypropylene Net	Manila Net	Total	Polypropylene Net	Manila Net
Haddock	1765	873	2638	67	33
Cod	1041	1121	2162	48	52
Sea Dabs	3047	2333	5380	57	43
Pollock	263	334	597	44	56
Yellowtail flounder	200	95	295	68	32
Gray sole	55	50	105	52	48

1/Two tows were deleted from all calculations as not being representative. A large school of cod and pollock was encountered during these tows, made with the polypropylene-equipped net, which would have weighted catches disproportionately because of obviously increased availability of fish.

Internal, wet after-use measurements were taken of the top sections of both trawls. The dry before-use, polypropylene, 5-inch netting of a 42-thread-cotton-equivalent-diameter size, when measured after-use and while wet, had an average mesh size (stretched measure between knots) of 4.76 inches. The 5-inch, 100 yard 3-ply manila netting averaged wet after-use, 4.42 inches.

Also in agreement with findings of cruises 61-2 and 61-6 of the Delaware, captains of three commercial vessels report favorably on fishing results obtained using Bureau-supplied net sections and ropes aboard their own boats. These reports indicate higher catch rate, easier handling and easier towing of the polypropylene-equipped nets. The chief engineer of one of the vessels reported that his engine exhaust temperatures were consistently lower when the experimental net was towed although the same propeller r.p.m. was maintained as with the standard net. The lighter engine loading indicates a lower water resistance of the net and resultant higher towing speed.

In addition to positive results obtained, certain objectionable qualities of the synthetic material were noted. Because of its black color, broken strands were harder to find for mending--especially at night-time and, because of the hard slick surface, special effort was required to tie knots that would hold. Many broken meshes that were believed at first to be a result of parted twine were found to be caused by a slippage of the twine bobbin "end knots" tied during netting manufacture. (The visibility problem can be readily solved by having the twine made up in another color. Elimination of the knot slippage will probably require modifications of the fiber or treatment of the twine.)

The $3\frac{3}{4}$-inch-circumference headrope which initially measured 78 feet in length stretched to 86 feet during fishing trials. This is an increase of 9.06 percent which is within the manufacturer's stated elasticity (10 percent) for this material. The rope was found to have returned to a length of 78 feet-5 inches three days after completion of the cruise.

Fishing results to date indicate that replacement of the heavier-than-water materials in the top part of the trawl with buoyant materials, probably allows the headrope to rise higher. Because of reduced water

resistance of the polypropylene twine the net tows easier and it is likely that the footrope may tend bottom better. Increased catches experienced are attributed to these factors.

Note: Also see Commercial Fisheries Review, April 1961, p. 26.

North Atlantic Fisheries Investigations

BIOLOGICAL DATA ON GEORGES BANK SEA SCALLOPS COLLECTED:

M/V "Delaware" Cruise 61-7: As part of the U. S. Bureau of Commercial Fisheries research program on sea scallops, the Bureau's research vessel Delaware collected biological data at 160 stations on Georges Bank during a 10-day cruise that ended early in May 1961. Fishing operations were conducted on four major Georges Bank sea scallop production areas.

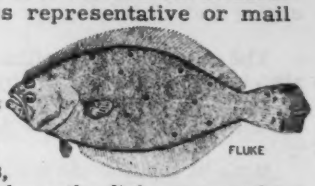
During the cruise 180 bathythermograph casts were made to obtain hydrographic data associated with the fishing stations. About 400 live scallops were brought back to the Bureau's Woods Hole (Mass.) Biological Laboratory for detailed study. In addition, several offshore species of fish were returned for the display tanks in the new Bureau aquarium. A fine collection of bottom invertebrates were also obtained which included several varieties of starfish, sea anemones, giant barnacles, and many other marine animals.

* * * * *

FLUKE TAGGED OFF EASTERN LONG ISLAND:

A total of 1,800 fluke (summer flounder) were tagged and released on offshore grounds southeast of Long Island in 50-70 fathoms of water by U. S. Bureau of Commercial Fisheries biologists. This area is near Hudson Canyon and in the area where commercial concentrations of fluke are found in winter and early spring, following their fall offshore movement. The fluke were tagged with red and white plastic discs which were attached to the edge of the fish just behind the head.

Presumably, many of these tagged fish will be caught this summer in coastal waters from Delaware Bay to Cape Cod. Tag recoveries will provide useful information on migrations and the biology of this valuable sport and commercial fish. The help of fishermen and others handling fish is needed for the success of tagging studies. If you find a tagged fluke, take it to the nearest Federal or state fisheries representative or mail the tag to the U. S. Bureau of Commercial Fisheries, Woods Hole, Mass. Be sure to give your name and address, date and place where the fish was caught (if you have this information), and method used to catch it.



A reward of $1 will be paid for each tag turned in. If both tag and fish are brought in so that measurements can be made, $2 will be paid. For your cooperation the Bureau will also send you details of the tagging.

Oceanography

DUKE UNIVERSITY TO BUILD BIOLOGICAL OCEANOGRAPHIC VESSEL:

Increased knowledge of marine biology on the central Eastern Seaboard will be made possible by a National Science Foundation grant to Duke University, according to a June 9, 1961, news release.

The $618,276 grant will enable Duke's Marine Laboratory near Beaufort, N. C., to construct a biological oceanographic vessel, one of the first major United States research vessels to be designed and built with biological oceanography as its prime function. Students will also receive training in the marine sciences aboard the vessel.

The grant provides for a design and feasibility study, construction and fitting of the vessel, and installation of oceanographic equipment. It will also help build a pier extension at the Marine Laboratory's Piver's Island site across the Newport River from Beaufort, a storehouse for ship's gear, and a laboratory for use of participants in a proposed cooperative research and training program.

The vessel will be about 120 feet in length. It will accommodate approximately 12 scientists and graduate students, and 8 crew members. Capable of work on the high seas, it will operate primarily from Virginia to North Florida, and from the shoreline through the Gulf Stream to the outer edge of

the continental shelf. The ship will be of steel construction with an 800-horsepower engine and a cruising speed of 10 to 11 knots.

The ship and its ancillary facilities will also be available for use by scientists and students of other institutions interested in the marine biology of the Atlantic Coast.

None of the marine laboratories in the Duke area has vessels large enough to work safely in offshore waters. Acquisition and operation of this vessel will enable Duke and other interested universities to extend the scope of their research to include the deep ocean as well as the estuaries and immediate coastline.

Research will be carried out on such problems as seasonal abundance and breeding seasons of important fish and other organisms, food chains and productivity, the distribution of flora and fauna, types and qualities of substrate, and seasonal distribution of planktonic larvae. The vessel will also make possible a more comprehensive study of the migration of crustaceans and fish.

Duke's Marine Laboratory, which occupies 13 acres of the southern portion of Piver's Island, is an administrative unit of Duke's College of Arts and Science. It is only 1.5 miles from open ocean.

* * * * *

VERTICAL OCEAN CIRCULATION HELPS TO FEED FISH:

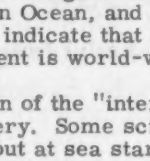
Vertical circulation of ocean waters near the ocean surface is helping to feed the fishes of the sea. U. S. Navy scientists have measured distinct sinking and upwelling of water masses near the surface for the first time, the Navy's Electronics Laboratory in San Diego, Calif., reported. The currents could continually bring up food from the depths for the surface marine life and also take down the surface food, such as plankton, for the larger fish in the deeper depths.

The currents are formed by relatively large waves that are found where cold deeper layers meet the warmer surface layers. These "internal waves" create vertical currents as they roll along.

Knowledge of these currents is very desirable for underwater missile launching, submarine movement, and the distribution of food for marine life. Television and movie cameras were used to spot the currents. The equipment was housed in a car suspended from a tower, one mile off the California coast.

Similar investigations in the Atlantic Ocean, Indian Ocean, and the Gulf of Mexico strongly indicate that the vertical current movement is world-wide.

The origin of the "internal waves" is still a mystery. Some scientists believe storms far out at sea start the waves, others think they are due to cold and warm layers meeting.



Oregon

FROZEN FISH AND SHELLFISH DEALER LICENSE RULE CHANGED:

The law requiring Oregon retail dealers and wholesale distributors handling or dealing in packaged frozen food fish or packaged frozen shellfish to have a license was repealed by the 1961 legislature, the Oregon Fish Commission auditor reminded dealers on May 11, 1961. The repeal is to become effective August 9, 1961.

Retail and wholesale distributors in Oregon handling packaged frozen food fish or packaged frozen shellfish only, at any time prior to August 9, 1961, will be required to have the proper license at the regular fee of $3 for a retail dealer, or $10 for a wholesale distributor.

The present law does not permit refunding fees to those who have bought licenses for the entire license year ending March 31, 1962, nor does it permit the issuance of licenses for part of a license year.

Wholesalers, peddlers, and retail dealers handling fresh and unpackaged frozen food fish or shellfish will still be required to have the proper license.

Oysters

STEEL RAFT FOR GROWING OYSTERS DEVELOPED BY TEXAS INVENTOR:

A Texas inventor has applied for a patent on a steel raft developed for growing oysters in Texas waters.

The raft is made of 4-foot diameter steel pipe with three braced cross-pipes of 6-inch diameter and 33 feet long. The over-all dimensions are 34 feet by 41 feet.

The raft is to be towed to the seeding grounds, where it will be sunk. On the raft there are uprights along which reinforcement rods are placed. From the rods there will be stringers of plastic strips that will act as the cultch for collecting the oyster spat. The raft, after the oyster spat has set, will be raised, if this appears necessary, and towed to the growing area. When the oysters mature, the raft will again be raised and towed directly to the dock. It is estimated it will take approximately 45 minutes to one hour to raise the raft and this will be the only labor involved until the dock has been reached.

The purpose of using this method is to save labor in harvesting and to have mobility to preselect areas having optimum growing conditions.

If this project works as planned, several more larger-size rafts will be built.

The inventor has conferred with shellfish biologists and feels that the raft method has possibilities.

Polish Modern Stern-Type Trawler Factoryship

ENTERS U. S. PORT FOR REPAIRS:

A modern Polish stern-trawler factoryship was in Boston, Mass., during March this year for repairs to a damaged propeller. This vessel is the same type that the Polish have been making for Russia. The vessel was built in Gdynia, Poland, 1959, of 2,670 gross tons, about 281 feet long with a 45-foot beam and 17-foot draft; the vessel has a speed of about 13½ knots.

The trawler had been fishing on the Grand Banks and off Greenland for ocean perch and cod, but was caught in ice for 10 days. The fishermen work 4 hours on and 4 hours off during the day and 6 hours on and 6 hours off at night and sleep two to a stateroom. The crew consisted of 105 men when they docked at Boston.

Fig. 1 - The modern Polish stern trawler viewed from the bow while in drydock at Boston, Mass.

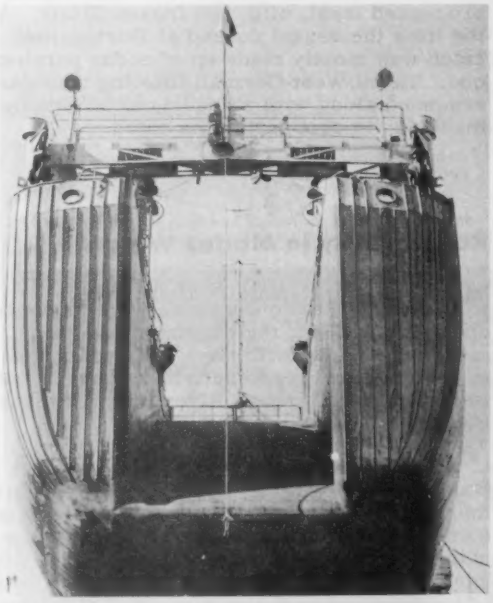


Fig. 2 - View from outside of stern section of Polish stern trawler showing the chute for launching and retrieving the otter trawl.

The vessel is usually at sea about 70 days to a trip and then stays in port a month.

It can carry enough oil, food, and other supplies for the complete trip, with the exception of a stop for fresh water. The vessel's base of operations is Gdynia.

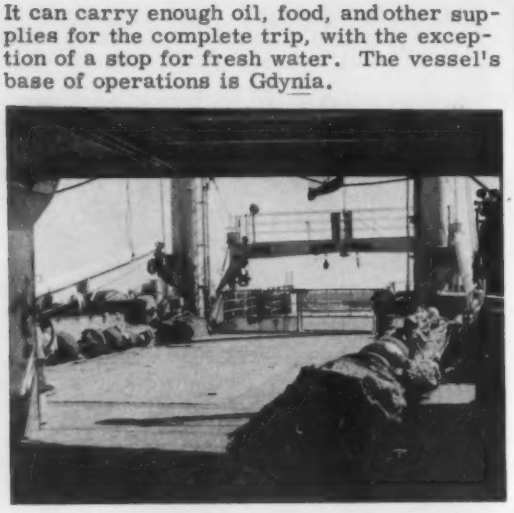


Fig. 3 - View from inside of stern section of the Polish stern trawler with nets stowed on each side of clear deck space.

The Polish vessel can process a catch of 36 tons a day and the gross holding capacity of the vessel is about 2,500 metric tons of processed meal, oils, and frozen fillets. At the time the vessel docked at Boston, the catch was mostly made up of ocean perch and cod. Three West German filleting machines are used along with a heading and skinning machine for processing the catch.

Radioactivity in Marine Waters

LONG-RANGE STUDY ANNOUNCED:

The U. S. Public Health Service announced on March 2, 1961, the beginning of a joint long-range study with the U. S. Department of the Interior of radioactivity in the estuarial waters of the Savannah River, near Savannah, Ga.

The purpose of the study is to trace the routes of radioactivity in a marine environment, from its source to possible human consumption, and to study factors affecting the uptake or reconcentration of radioactivity by various forms of marine life. Measurement of the levels of radioactivity present in the marine environment, including water, fish mollusks, aquatic plants, silt, and suspended solids, will be conducted by the Public Health Service in the estuary and, later, in the upstream waters of the river.

The initial phase of the study will consist of monthly and seasonal collections of water and silt samples, shrimp and crabs, oysters, minnows, and other types of fish life, together with marine plants. The samples will be examined by the Public Health Service radiological laboratory at Montgomery, Ala., where an analysis for specific radioactive substances such as strontium-90 will be conducted. The U. S. Fish and Wildlife Service is performing specialized analyses of marine organisms.

Research Vessels

LOUISIANA FIRM TO CONSTRUCT FISHERY RESEARCH VESSEL:

A $1,773,948 contract for construction of an ocean fishery research vessel for use primarily in the Northwest Atlantic has been awarded to the Southern Shipbuilding Corporation of Slidell, La., Secretary of the Interior Stewart L. Udall announced on May 17, 1961.

Bids were opened on April 14, 1961. There were five bidders. The vessel was designed by Dwight S. Simpson and Associates, naval architects and marine engineers of Boston, Mass. The vessel will replace the Albatross III which was deactivated more than a year ago.

This vessel is one of the first to be constructed under the new national oceanographic program which has received endorsement and impetus by the President. It is a program under which concerted attention will be given to the whole national effort in basic and applied ocean research.

One of the objectives of the fisheries part of the oceanographic investigations is to help the domestic industry in the quest for the three billion additional pounds of fish the Nation will be consuming 20 years hence. Another is to add to the accumulating oceanographic knowledge through water temperature findings, data on the chemical content of sea water at various places and under various conditions, factors affecting plant and animal life in the sea, information on surface and subsurface water movements, and many other kinds of oceanographic data acquired automatically in fishery biological studies.

The naval architects designed the vessel to meet the needs set forth by the fishery scientists of the U. S. Bureau of Commercial Fisheries. A vessel design committee (composed of biologists) conferred often with the architects to help design a ship which will be functional both from the standpoint of a floating laboratory and an ocean-going ship. Its task will be to perform the numerous studies necessary to determine the distribution and the variation in abundance of the bottomfish of the Northwest Atlantic and to conduct various phases of oceanographic research.

It will be a stern trawler, the first to be built in the United States and to operate from a North American port. It is patterned after the new German and Danish stern trawlers, and will be equipped with a ramp to haul the loaded nets aboard. This permits the continuance of exploratory or experimental fishing during heavy weather.

The ship will be of welded steel construction, single bottom, and with single screw and rudder. It will have one continous deck, two partial decks, and two superstructure decks, with laboratories and scientific equipment. Adequate berth and mess space will be provided for 16 scientists and 25 crew members.

The vessel will have over-all length of 187 feet. Length at the waterline will be 173 feet nine inches. The beam is 33 feet. The ship has a ready-for-sea-displacement of 1,000 tons, will travel 12 knots an hour, and has a range of 9,000 miles. It will carry 80 tons of fresh water. It is designed for use in general fisheries and oceanographic research in any navigable waters in the world in all seasons and in all reasonable conditions of weather and temperature.

The cost of $1,773,948 includes basic laboratory and research facilities. Following construction, which is estimated at 15 months, the vessel will be based at Woods Hole, Mass.

Salmon

UTILIZATION OF UNITED STATES LANDINGS, 1956-60:

During the 5-year period, 1956-60, United States landings of salmon varied between a high of 324.2 million pounds in 1956 and a low of 201.7 million pounds in 1959. The

Iced troll-caught salmon aboard an Alaska troller.

average amount of salmon used for canning during the five-year period was close to 87 percent, varying between 89.0 percent in 1960 and a low of 85.3 percent in 1958. The five-year average disposition of salmon landings for other than canning was 3.0 percent for mild-curing, 4.7 percent for the fresh market trade, and 5.3 percent for freezing.

Utilization of United States Salmon Landings, 1956-60

Year	Canned	Mild-Cured	Fresh	Frozen	Total
	(1,000 Lbs.)				
1960	214,382	6,527	7,699	12,392	241,000
1959	173,990	9,258	6,967	11,469	201,684
1958	262,381	9,690	21,453	13,933	307,457
1957	232,229	6,831	13,741	12,352	265,153
1956	282,270	7,070	14,513	20,396	324,249

Scallops

SHUCKING MACHINES DEVELOPED FOR CALICO SCALLOPS:

Two different companies already have successfully developed shucking and separating machines for calico scallops, and a third company is now testing shucking and separating machines. One company has already established a pilot plant in Cocoa, Fla., and a second company is expected to erect a plant in the very near future. The third company presently experimenting with shucking and separating machines is a very prominent fish processing company.

The calico scallop (Pecten gibbus) is a species of scallop smaller than the regular New England scallop. Extensive grounds of the scallops were discovered off the east coast of Florida (from Daytona Beach southward to Ft. Pierce in depths of 10 to 32 fathoms) in 1960 by U. S. Bureau of Commercial Fisheries exploratory fishing work.

Note: Also see Commercial Fisheries Review, July 1960 p. 41.

Shrimp

U. S. PRODUCTION OF SHRIMP PRODUCTS, 1952-60:

The United States production of manufactured shrimp products in 1959 amounted to 163.6 million pounds valued at $115.1 million at the plant. Compared with 1958, this was an increase of 10 million pounds, but a drop in value of $13 million because of lower prices in 1959.

The larger 1959 pack was almost all due to an increase in fresh and frozen shrimp--148 million pounds in 1959 as

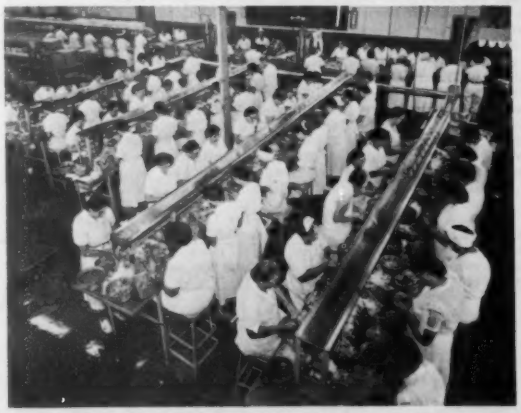


Fig. 1 - Hand peeling and deveining of shrimp at a large shrimp-processing plant in Tampa, Fla.

Table 1 - U. S. Production of Shrimp Products, 1952-1960

Item	1960		1959		1958		1957		1956		1955		1954		1953		1952	
	Qty.	Value	Qty.	Value	Qty.	Value	Qty.	Value	Qty.	Value	Qty.	Value	Qty.	Value	Qty.	Value	Qty.	Value
	1,000 Lbs.	US$ 1,000	1,000 Lbs.	US$ 1,000	1,000 Lbs.	US$ 1,000	1,000 Lbs.	US$ 1,000	1,000 Lbs.	US$ 1,000	1,000 Lbs.	US$ 1,000	1,000 Lbs.	US$ 1,000	1,000 Lbs.	US$ 1,000	1,000 Lbs.	US$ 1,000
Fresh and Frozen:																		
Raw, headless	1/	1/	61,598	36,980	63,276	48,214	58,268	45,070	61,355	42,633	69,123	36,690	82,416	43,115	61,990	41,497	59,536	35,919
Peeled, raw (incl. deveined)	-	-	11,096	9,945	7,622	8,450	9,375	9,952	7,512	7,304	6,745	5,896	4,156	2,605	610	382	280	192
Cooked (incl. peeled & deveined)	-	-	1,891	2,816	2,080	3,405	1,444	2,488	2,237	3,101	1,758	1,798	1,607	2,056	739	1,124	2,548	3,350
Breaded (raw & cooked)	-	-	69,764	45,314	60,865	43,622	51,085	37,764	50,888	37,301	38,991	26,907	24,802	17,579	17,438	13,393	17,265	12,841
Specialties (soups, stews, sticks, etc.)	-	-	3,636	2,693	3,664	2,938	3,575	2,859	2,907	1,688	1,657	1,252	524	460	1/	1/	1/	1/
Total fresh & frozen	1/	1/	147,985	97,748	137,507	106,629	123,727	98,133	124,899	92,027	188,274	75,543	113,505	65,815	80,797	56,396	79,629	52,302
Canned:																		
Natural (drained weight)	2/13,965	16,920	13,832	16,948	14,108	20,790	9,120	13,136	13,636	16,421	13,516	13,562	14,021	13,691	15,242	18,947	12,269	12,999
Specialties (soups, stews, etc.)	261	61	178	51	246	94	394	159	571	336	287	116	305	101	410	205	467	225
Total canned	14,226	16,981	14,010	16,999	14,354	20,884	9,514	13,295	14,207	16,757	13,803	13,678	14,326	13,792	15,652	19,152	12,736	13,224
Other:																		
Sun-dried	1/	1/	322	291	349	494	347	561	471	607	498	416	990	611	3/923	903	3/1,105	1,095
Cured (salted, pickled, & smoked)	1/	1/	12	24	57	92	76	103	37	56	69	74	3/	3/	3/	3/	3/	3/
Meal and bran	340	10	1,254	39	1,162	30	808	24	1,122	34	1,036	35	1,770	51	2,000	80	2,068	87
Total other	1/	1/	1,588	354	1,568	616	1,231	688	1,630	697	1,603	525	2,760	662	2,923	983	3,173	1,182
Grand total	1/	1/	163,583	115,101	153,629	128,129	134,472	112,116	140,736	109,481	133,680	89,746	130,591	80,269	99,372	76,531	95,538	66,708

1/Data not available.
2/Preliminary.
3/Cured shrimp are included with sun-dried shrimp.

Fig. 2 - Raw breaded shrimp on conveyor belt moving to weighing and packaging line.

compared with 137 million pounds the previous year, but the value was nearly $9 million less. More frozen breaded (raw and cooked) shrimp and raw peeled and deveined shrimp was packed in 1959 than in any previous year in the history of the shrimp products industry. It is estimated that the 1960 production of frozen breaded and raw peeled and deveined shrimp will exceed that for 1959. The 1959 pack of frozen breaded (raw and cooked) shrimp was 9 million pounds more than the previous year. The production of raw peeled and deveined shrimp in 1959 totaled 11.1 million pounds--an increase of 3.5 million pounds over 1958. The 1959 canned shrimp (natural-drained weight) pack declined only 0.5 million pounds from the previous year but the value dropped $3.8 million because of lower prices.

The only data presently available for 1960 are for canned shrimp and several other shrimp specialties. The 1960 canned shrimp (natural-drained weight) pack of 14 million pounds valued at $16.9 million was about the same as in 1959.

South Atlantic

Exploratory Fishery Program

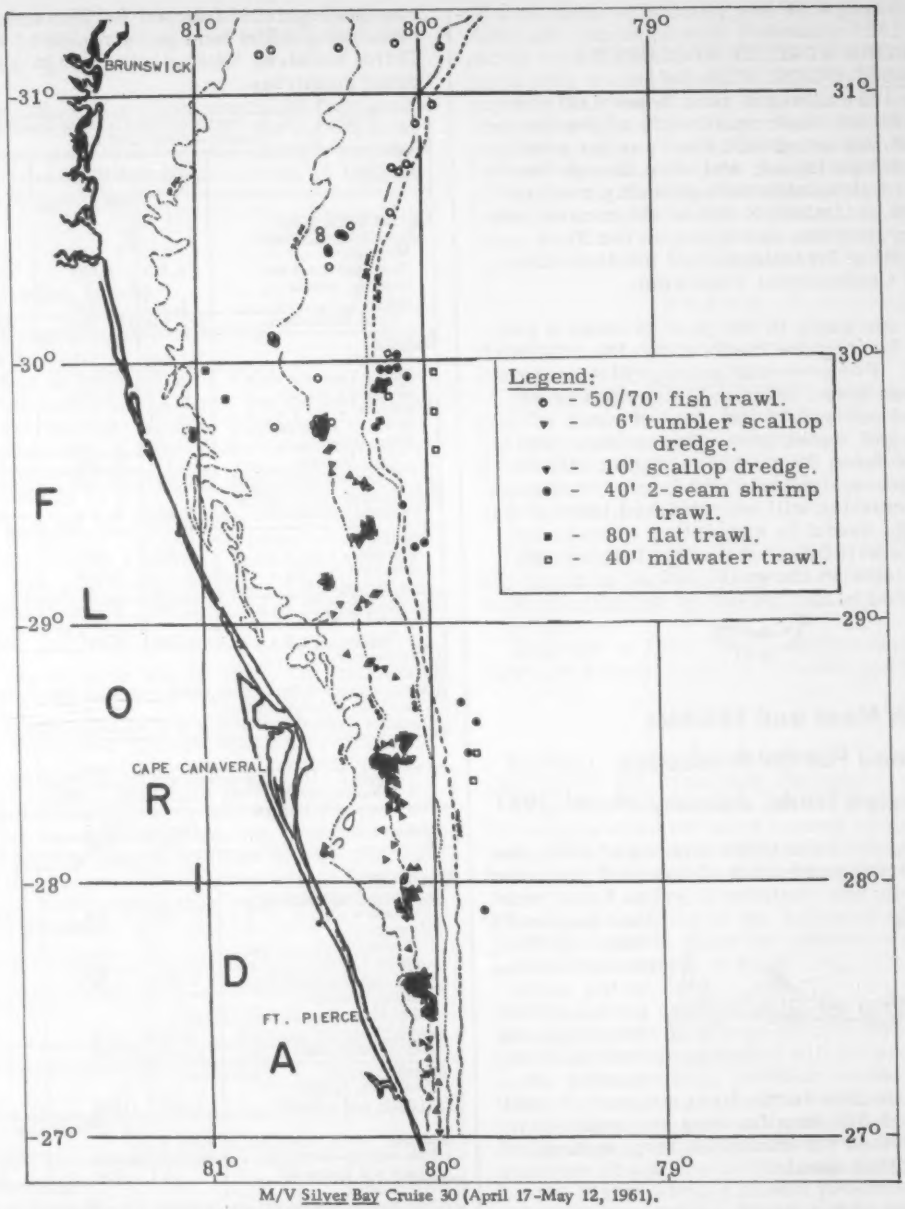
FISH AND SHELLFISH EXPLORATION OFF GEORGIA AND FLORIDA:

M/V "Silver Bay" Cruise 30: On May 11, 1961, the U. S. Bureau of Commercial Fisheries exploratory fishing vessel Silver Bay completed another of a series of cruises designed to determine the fishery resources off the coasts of Georgia and Florida. During the cruise, 200 stations were occupied along the Continental Shelf and Slope between Brunswick, Ga., and Ft. Pierce, Fla.

Fish trawling was conducted at 37 stations using a 50-foot headrope and 70-foot footrope roller-rigged fish trawl to determine the commercial availability of snapper, grouper, and related species. Maximum catches of readily salable species were about 1,000 pounds per hour, comprised of some 60 percent vermillion snapper, 20 percent porgies, and 20 percent other snappers and grouper. All successful fish trawling was conducted in conjunction with recorder indications of fish concentrations. No gear damage was experienced during this phase of cruise 30.

Royal-red shrimp (Hymenopenaeus robustus) were trawled at 17 stations between St. Augustine and Cape Canaveral, Fla., to compare the potential with that observed in previous years. One 24-hour fishing period (5 drags) working in depths of 164 to 190 fathoms produced 1,195 pounds (heads-on) of 31-35 count royal-red shrimp.

Further delineation of the calico scallop bed off Cape Canaveral was conducted with 135 stations made in 10 to 40 fathoms between Summer Haven and Jupiter Inlet. Dead shell and varying amounts of live



M/V Silver Bay Cruise 30 (April 17-May 12, 1961).

scallops were taken over the entire area surveyed. Using a 6-foot tumbler dredge catches ranged up to a maximum of 9½ bushels of medium (average diameter 21 inches) scallops which yielded 3 to 3½ pints of meats from the average 75-pound bushel of shell stock.

Note: Also see Commercial Fisheries Review, May 1961 p. 24, May 1960 p. 29, March 1960 p. 26, and February 1960 p. 42.

Tuna

ALBACORE FISHERY PROSPECTS OFF WEST COAST FOR 1961:

The 1961 albacore tuna fishery off the United States west coast south of the International Border should reach as far south as Guadalupe Island, and even though the center of abundance will probably remain offshore, a limited to moderate coastal fishery may develop, according to the Tuna Forecasting Investigation of the U. S. Bureau of Commercial Fisheries.

It is too early in the year to make a prediction for regions north of the International Border. For previous years, relationships have been noted between temperatures in June and early July and area of catch off Oregon and Washington. Sea-surface temperature from the northern region will be examined continuously and interpretation of the information will be published later if it is thought useful in suggesting whether or not there will be a substantial fishery off Oregon later in the year.

U. S. Fish Meal and Solubles Supply and Fish Oil Production and Foreign Trade, January-March 1961

During the first three months of 1961, the United States production of fish meal amounted to 7,600 tons as compared with 10,000 tons produced in the same period of 1960. As compared with the first quarter of 1960, production in the first quarter of 1961 was down 2,800 tons for tuna and mackerel, and up 41 tons for menhaden meal and up 350 tons for other meals.

Imports of fish meal and scrap totaled 44,300 tons for January-March 1961--higher by 9,000 tons than during the same period of last year. Imports from Peru (30,700 tons) made up 69 percent of the total imports, while Canada followed with the next largest amount imported (almost 6,700 tons). The remaining 6,900 tons were received from Chile, Union of South Africa, Angola, and other countries.

Table 1 - U. S. Supply of Fish Meal and Solubles, January-March 1960-61

Product	January-March 1961 1/	January-March 1960	Total 1960 2/
	(Short Tons)		
Fish Meal and Scrap:			
Domestic Production:			
Menhaden	531	490	218,423
Tuna and mackerel	4,852	7,699	26,325
Herring, Alaska	-	-	6,071
Other	2,173	1,819	38,897
Total Production	3/7,556	3/10,008	289,716
Imports:			
Canada	6,665	11,316	30,982
Peru	30,726	17,467	68,156
Chile	2,377	3,758	21,183
Angola	1,433	-	888
Union of South Africa	3,036	2,678	7,073
Other countries	96	85	3,279
Total Imports	44,333	35,304	131,561
Total Fish Meal Supply	51,889	45,312	421,277
Fish Solubles (wet weight):			
Domestic Production 4/	5,281	5,971	98,929
Imports:			
Canada	329	273	869
Denmark	-	1,858	1,858
Other countries	180	45	447
Total Imports	509	2,176	3,174
Total Fish Solubles Supply	5,790	8,147	102,103

1/Preliminary.
2/Revised.
3/Based on reports from firms which accounted for 93 percent of the 1960 total production.
4/Includes production of homogenized-condensed fish.

Table 2 - U. S. Production and Foreign Trade in Marine Animal Oils, January-March 1960-61

Product	January-March 1961	January-March 1960	Year 1960
	(1,000 U. S. Gallons)		
Marine Oils:			
Domestic Production: 1/			
Menhaden	10	10	24,454
Herring:			
Alaska	-	-	1,385
Maine	2/	2/	133
Tuna and Mackerel	101	97	507
Sardine, Pacific	-	-	144
Other (including whale oil)	51	111	1,204
Total Production 1/	162	218	27,827
Imports:			
Whale oil, sperm (crude and refined)	1,026	1,566	4,837
	(1,000 Lbs.)		
Exports:			
Fish and fish-liver oils	36,549	29,053	143,659
Whale and sperm oil	2	794	1,401

1/Preliminary.
2/Quantities of herring oil are included in "unclassified" in order to avoid disclosure of an individual firm's production.

During the first three months of 1961, the domestic production of fish solubles amounted to 5,300 tons--a drop of 700 tons from the same period of 1960. Imports of

this product totaled 500 tons during the first quarter of 1961 as compared with 2,200 tons during the 1960 three-months period.

A total of 36.5 million pounds of fish and fish-liver oils were exported during the first three months of 1961--up 7.5 million pounds as compared with the same period of 1960.

U. S. Foreign Trade

EDIBLE FISHERY PRODUCTS, MARCH 1961:

Imports of edible fresh, frozen, and processed fish and shellfish into the United States during March 1961 increased by 1.2 percent in quantity and 3.4 percent in value as compared with February 1961. The increase was due primarily to higher imports of groundfish fillets (up 1.0 million pounds), canned tuna in brine (up 1.6 million pounds), and frozen shrimp (up 1.4 million pounds). The increase was partly offset by a 2.3-million-pound decrease in the imports of frozen albacore and other tuna.

Compared with March 1960, the imports in March this year were up by 4.4 percent in quantity and 14.9 percent in value due to higher imports of frozen tuna other than albacore (up 4.4 million pounds), groundfish fillets (up 3.8 million pounds), frozen shrimp (up 1.8 million pounds), and canned tuna in brine (up 2.2 million pounds). Compensating in part for the increases was a drop of about 4.1 million pounds in the imports of frozen albacore tuna, and canned salmon (down 1.6 million pounds).

United States Imports and Exports of Edible Fishery Products, March 1961 with Comparisons

Item	QUANTITY			VALUE		
	March		Year	March		Year
	1961	1960	1960	1961	1960	1960
	(Millions of Lbs.)			(Millions of $)		
Imports:						
Fish & shellfish: Fresh, frozen, & processed 1/	83.8	80.2	1,011.2	27.7	24.1	304.8
Exports:						
Fish & shellfish: Processed only 1/ (excluding fresh & frozen)	1.7	3.5	48.7	1.0	0.9	19.2

1/Includes pastes, sauces, clam chowder and juice, and other specialties.

United States exports of processed fish and shellfish in March 1961 were lower by 62.0 percent in quantity and 47.4 percent in value as compared with February 1961. Compared with the same month in 1960, the exports this March were down 51.4 percent in quantity, but were up 11.1 percent in value. The lower quantity of exports in March this year as compared with the same month in 1960 were due mainly to much lower exports of California sardines and canned squid. The increase in value of the exports this March from March a year ago was due to relatively heavy exports of canned salmon.

* * * * *

IMPORTS OF CANNED TUNA IN BRINE UNDER QUOTA:

The quantity of tuna canned in brine which may be imported into the United States during the calendar year 1961 at the 12½-percent rate of duty is 57,114,714 pounds. Any imports in excess of the quota are dutiable at 25 percent ad valorem.

Imports from January 1-April 29, 1961, amounted to 15,083,873 pounds, according to data compiled by the Bureau of Customs.

Imports in 1960 for the period January 1-April 30 amounted to 13,516,144 pounds.

* * * * *

PRESENT ADMINISTRATION'S OUTLOOK ON FOREIGN TRADE:

The current Administration's outlook on the competitive effect of import trade was stated recently by the Deputy Assistant Secretary of Commerce for International Affairs, in an address entitled "The Foreign Economic Policies of the Administration." On May 5, 1961, when the address was delivered, he stated, in part:

"It is to be anticipated in the coming decade that the shifts in exports and imports of the United States will be accelerated. Consequently, producers now in the import competing industries will be under the necessity of improving their production methods or gradually moving out into industries which are more competitive. The United States simply cannot produce everything of everything. It will either have to relinquish certain areas of production, or permit some firms at the margin of efficiency to die.

"There is a hopeful alternative that the rate of growth throughout the world will

permit some industries in the United States to expand rapidly and become export oriented; while the import competing group merely expands less rapidly or stagnates--removing the necessity of any company going out of business.

"While this process of gradual attrition among industries goes on apace as a result of domestic competitive pressures without governmental subsidy or relief, the fact that the rules of the game are changed when tariffs are substantially altered, is justification for government assistance in relocation of industrial activity."

Virginia

INSTITUTE OF MARINE SCIENCE AWARDED GRANT TOWARDS CONSTRUCTION OF NEW LABORATORY:

The Director of the Virginia Institute of Marine Science, announced on May 16, 1961, that the National Institute of Health has awarded a health research facilities grant amounting to $27,345 to the Institute to defray part of the construction cost of the new microbiology-pathology building now nearing completion.

"The new laboratory will provide space for an expanding research program into the relationships between marine microorganisms and the state of health of all living things, including man," the Director reported. Microorganisms are often thought of as disease producers causing trouble among other plants and animals, but actually many of them are helpful. For example, soil scientists know that a thorough understanding of the soil condition includes knowledge concerning the bacteria and fungi which populate it. There is a direct relationship between these tiny one-celled plants, which live in the soil, and the fertility of the soil itself.

Scientists at the Virginia laboratory suspect that there is a similar situation in the marine and brackish waters; that bacteria and fungi affect growth of oysters and other marine crops, but there is not enough information yet to prove it. The facilities of the new building are designed to help with this problem. It is possible that stream pollution upsets the normal microflora, which in turn has its effects on these waters and their usefulness to man.

Studies to be conducted in this new laboratory may shed much light on problems of the oyster industry, and the Virginia fisheries in general.

Wholesale Prices, May 1961

The May 1961 wholesale price index for edible fishery products (fresh, frozen, and canned) at 128.5 percent of the 1947-49 average increased 2.1 percent from the preceding month, and advanced 1.5 percent from May 1961. The increase in the index from mid-April to mid-May this year was mainly due to higher prices for fresh drawn haddock, fresh or frozen dressed halibut and salmon, and a pronounced upturn in prices for fresh-water varieties. The price increase in fresh drawn haddock was also reflected in an advance in fresh haddock fillet prices. From May last year to this May, higher prices for fresh or frozen dressed halibut and salmon, shucked oysters, frozen haddock and flounder fillets, and canned salmon more than offset lower prices for fresh drawn haddock, the fresh-water varieties, and fresh and frozen shrimp.

Fresh East Coast shrimp on display at one of the stands at Fulton Fish Market, N. Y. C.

The fresh and frozen drawn, dressed, or whole finfish subgroup index for this May increased 11.9 percent from the preceding month. The more significant price increases were in fresh drawn haddock (up 40.0 percent) because of higher ex-vessel prices, and considerably higher prices for the fresh-water varieties. Prices were higher this May for fresh and frozen halibut and salmon, mainly due to higher ex-vessel prices for the fresh product. Compared with May last year, the subgroup index this May increased 3.7 percent. Higher prices for fresh and frozen halibut (up 15.3 percent) and fresh salmon (up 7.0 percent) offset sharp declines in fresh drawn haddock and whitefish prices.

From April to May this year the fresh processed fish and shellfish subgroup index declined 0.8 percent. Higher prices for fresh small haddock fillets (up 9.4 percent) were offset by a decline in the price of fresh shrimp at New York City (down 2.5 percent). As compared with May last year, prices for

Table 1 - Wholesale Average Prices and Indexes for Edible Fish and Shellfish, May 1961 With Comparisons

Group, Subgroup, and Item Specification	Point of Pricing	Unit	Avg. Prices 1/ ($)		Indexes (1947-49=100)			
			May 1961	Apr. 1961	May 1961	Apr. 1961	Mar. 1961	May 1960
ALL FISH & SHELLFISH (Fresh, Frozen, & Canned)					128.5	125.8	131.9	126.6
Fresh & Frozen Fishery Products:					140.6	136.1	146.8	142.2
Drawn, Dressed, or Whole Finfish:					155.6	139.0	161.3	150.1
Haddock, lge., offshore, drawn, fresh	Boston	lb.	.08	.06	78.1	55.8	122.4	94.1
Halibut, West., 20/80 lbs., drsd., fresh or froz.	New York	lb.	.35	.33	107.8	103.1	101.1	93.5
Salmon, king, lge. & med., drsd., fresh or froz.	New York	lb.	.88	.85	197.7	191.0	196.6	184.8
Whitefish, L. Superior, drawn, fresh	Chicago	lb.	.66	.46	163.6	114.0	173.6	183.4
Whitefish, L. Erie pound or gill net, rnd., fresh	New York	lb.	.83	.50	166.9	101.2	141.6	212.5
Yellow pike, L. Michigan & Huron, rnd., fresh	New York	lb.	.72	.51	167.7	119.6	164.2	170.0
Processed, Fresh (Fish & Shellfish):					142.3	143.4	150.1	145.8
Fillets, haddock, sml., skins on, 20-lb. tins	Boston	lb.	.29	.27	98.7	90.2	141.2	91.9
Shrimp, lge. (26-30 count), headless, fresh.	New York	lb.	.77	.79	120.9	124.0	134.3	135.1
Oysters, shucked, standards	Norfolk	gal.	7.25	7.25	179.4	179.4	173.2	170.1
Processed, Frozen (Fish & Shellfish):					112.8	113.7	115.1	117.7
Fillets: Flounder, skinless, 1-lb. pkg.	Boston	lb.	.39	.39	100.8	100.8	100.8	98.1
Haddock, sml., skins on, 1-lb. pkg.	Boston	lb.	.32	.32	100.5	100.5	105.2	80.1
Ocean perch, skins on, 1-lb. pkg.	Boston	lb.	.29	.29	116.8	116.8	122.8	112.8
Shrimp, lge. (26-30 count), 5-lb. pkg.	Chicago	lb.	.69	.70	105.7	107.2	107.2	123.5
Canned Fishery Products:					112.2	112.2	111.2	104.8
Salmon, pink, No. 1 tall (16 oz.), 48 cans/cs.	Seattle	cs.	28.00	28.00	146.1	146.1	146.1	127.8
Tuna, lt. meat, chunk, No. 1/2 tuna (6-1/2 oz.), 48 cans/cs.	Los Angeles	cs.	11.00	11.00	79.3	79.3	79.3	80.0
Sardines, Calif., tom. pack, No. 1 oval (15 oz.), 24 cans/cs.	Los Angeles	cs.	4.50	4.50	105.0	2/105.0	91.0	93.9
Sardines, Maine, keyless oil, 1/4 drawn (3-3/4 oz.), 100 cans/cs.	New York	cs.	8.75	8.75	93.1	93.1	93.1	93.1

1/Represent average prices for one day (Monday or Tuesday) during the week in which the 15th of the month occurs. These prices are published as indicators of movement and not necessarily absolute level. Daily Market News Service "Fishery Products Reports" should be referred to for actual prices.
2/Revised due to shift from 48 cans/case to 24 cans/case for California sardines.

items in the subgroup this May declined 2.4 percent. Increases in the fresh haddock fillet prices at Boston and shucked oyster prices were offset by a decrease (10.5 percent) in the New York City fresh shrimp price.

Wholesale prices this May for frozen processed fish and shellfish also declined slightly (0.8 percent) from the preceding month. Prices of all items were unchanged from the previous month except frozen shrimp at Chicago which dropped 1.4 percent. The subgroup index declined 4.2 percent from May 1960 to this May because of lower frozen shrimp prices at Chicago (down 14.4 percent). The decline was offset somewhat by higher prices for all frozen fillets (frozen haddock fillets were up 25.4 percent).

There was no change in the subgroup index for canned fishery products from April to May this year. Prices, on the whole, were at the same level as the previous month. Compared with May a year ago, the subgroup index increased 7.1 percent largely due to a 14.3-percent increase in canned pink salmon prices, the same as occurred in April. Canned California sardines were up 11.8 percent, but canned tuna prices were only slightly below (down 0.9 percent) the May 1960 prices. Maine canned sardine prices this May were unchanged from the same month a year earlier.

International

FISHING LIMITS

NORWAY AND UNITED KINGDOM RATIFY AGREEMENT:

The ratification documents containing the agreement between Britain and Norway on the fishing limits off the Norwegian coast were exchanged at the British Foreign Office, London, on March 3, 1961.

Main provision of the agreement is that British trawlers be allowed to fish in the outer six-mile zone for a period of 10 years, when Norway extends her fishing limits from 4 to 12 miles. The agreement comes into force automatically with the exchange of documents. The extension of the limits will be undertaken in two stages--from 4 to 6 miles on April 1, and from 6 to 12 miles on September 1. The 10-year period is reckoned from October 1960, when the provision was agreed upon and consequently expires in October 1970.

The Norwegian Government has hired six whale catchers to be employed as fisheries patrol vessels. (The Fishing News, March 10, 1961.)

FOOD AND AGRICULTURE ORGANIZATION

FISHERIES EXPERTS ASSIGNED ON SURVEYS IN LATIN AMERICA, AFRICA, AND CYPRUS:

Three experts in fisheries economics were nominated for Food and Agriculture Organization (FAO) assignments in Cyprus, Chile, and in the Federation of Rhodesia and Nyasaland during March 1961. The experts were the Director of the Division of Technology, Central Fisheries Experimental Station, Palermo, Sicily; a lecturer from the College of Technology, Portsmouth, England; and the Managing Director of a canning company in Cape Town, South Africa.

The Technology Director from Sicily arrived in Cyprus, March 9, for a four-months assignment as a fisheries development expert. His assignment will be to do an economic survey of the fisheries potential in the Cyprian offshore waters.

The British lecturer will be the economist member of a three-man team which will conduct a reconnaissance survey of Kariba Lake in the Federation of Rhodesia and Nyasaland. The survey will be used to prepare a plan of action for a full-scale study of the fishery potential of the reservoir. He also left March 9 for Kariba Lake and was scheduled to join the other team members consisting of a fisheries biologist with the California Department of Fish and Game, and the Chief of the Fishing Gear Section, Fisheries Technology Branch, Fisheries Division, FAO. His assignment will also be for 4 months.

The Director of the South African canning firm, who has previously visited Peru and Chile to study fishery developments, left for Chile in March where he will spend a year as a fish-marketing expert. He will advise the government and fisheries industry on problems arising from efforts to rehabilitate the Chilean fishing industry following the earthquake there last year.

* * * * *

FISHERY RESEARCH VESSELS TOPIC OF FORUM IN TOKYO:

How do creatures seven miles down in the ocean's depths generate light within their bodies? Why do fish migrate; do they navigate celestially as birds do? Adult sea fish are caught, but their eggs are never found. Where do they spawn?

Questions like these are beginning to be answered by research vessels exploring the sea, which contains regions less known than the moon's surface.

Some 200 Japanese research vessels range thousands of miles from their native land, testing currents, temperatures, the concentration of plankton--gathering indicators of where the fish are. Waiting for this

International (Contd.):

information is the far-flung Japanese fishing fleet.

The fishery research vessel, which not only collects hydrographic information, but tests new fishing methods and gear, will be the major subject at a Food and Agriculture Organization (FAO)-sponsored forum on research vessels, September 18-30, 1961, in Tokyo, Japan.

"The purpose of the meeting is to compile and exchange information on the design and operation of research vessels, particularly those for fishery research," said the Chief of FAO's Fishing Boat Section, who will serve as secretary of the meeting. "It will also give oceanographers, biologists, and naval architects a chance to discuss mutual problems and accomplishments."

The necessity for fishery research can be illustrated by the fact that millions of tons of fish protein are taken from the sea each year. The amount taken has increased by about one half in the last 10 years.

"With a growing world population, the sea will have to increase its harvest. But for this increase we must know the best method of protecting and utilizing her resources," the Chief of the Fishing Boat Section stated. "Only a few kinds of fish of the large number of known varieties are caught. Many parts of the ocean, especially in the southern hemisphere, are scarcely fished at all."

Fisheries research vessels, no matter who designs them, all have one thing in common. They are expensive. For the ships must be floating laboratories.

"A small research vessel of about 500 tons will cost around 1.65 million dollars," he said. "This is expensive, but any ship of 500 tons is expensive. The reason for the high cost, is all the instruments and facilities that a research vessel must carry. The United States of America is planning to build 70 research vessels costing $210 million during the next 10 years.

"There is a need for vessels to do just basic research," he added. "The maximum economic yield of many fisheries needs to be determined. Prior to World War II, Japan was one of the few countries greatly involved in such research. Japan now depends on fish as their principal source of animal protein and the Japanese not only eat hundreds of varieties of fish, but many kinds of seaweed.

"Comparing fisheries with agriculture, we are far behind. For instance, the yield of the sea possibly could be increased by 'ploughing' the ocean bottom as one would till the soil. This would bring dissolved substances from the depths to the surface and provide more food for fish."

Fishery research vessels have already paid off in immediate results. A German vessel, the Anton Dohrn, has found several new fishing grounds. One bank located near Greenland and yielding ocean perch has been named the Dohrn Bank.

A Norwegian fisheries research vessel spotted the herring before they reached the Norwegian fjords. This enabled the herring season to be extended and the increased revenue from the larger catch paid for the boat.

FAO's Fishing Boat Section has advised a number of its member governments, including the United States and Iceland, on the designs of their fishery research vessels. The Section designed three such vessels for the Union of South Africa. Another of its jobs was saving the Swedish Government about $160,000 on refitting its fishery research vessel, the Skagerak. The Section recommended engines and winches that cut the refitting cost; the resulting saving more than equaled the Swedish contribution to FAO that year.

The Research Vessel Forum will not be just limited to fishery research ships. The Forum will also examine hydrographic survey ships, polar exploration vessels, hospital ships, lighthouse tenders, cable ships, and nonmagnetic ships.

* * * * *

INTERNATIONAL MEETING ON ROLE OF FISH IN NUTRITION:

The role of fish in world nutrition--the present abundance of fish and future potential supply--will be discussed at an international conference on Fish in Nutrition, to be held from September 19-27, 1961, in Washington, D. C.

Sponsored by the Food and Agriculture Organization (FAO), the conference will deal with the world production and utilization of fish, not only for human nutrition but also in animal feeding. The U. S. Fish and Wildlife Service is handling the conference on behalf of the United States Government.

Participants representing some 50 nations of FAO's 82-nation membership are expected

International (Contd.):

to attend, along with scientists invited from governmental and non-governmental organizations and members of the fishing industry.

"The conference is unique in that it will be the first time that scientists in the fields of nutrition, fisheries, and animal health have been gathered together with experts in fish processing to consider what is really known of the place of fish and fishery products in human and animal nutrition," the chief of FAO's fisheries technology branch and general secretary of the meeting stated.

The conference will provide an opportunity to compile and make available internationally the current knowledge on the nutritive value of fish and fishery products and on the biological factors affecting their nutritional value.

Discussion at the conference on nutritional, biochemical, and clinical research now under way on fishery products and components should provide a guide for future scientific investigation to fill in the gaps in research knowledge.

A grant given by the U. S. National Institutes of Health through the U. S. National Academy of Science will provide for a limited number of travel fellowships to enable internationally-known scientists to participate in the conference. These grants are also partly designed for the active scientist in developing countries, who can utilize knowledge gained at the conference upon his return.

The agenda calls for papers to be presented on such topics as the importance of fish protein in combating protein malnutrition, as found in weaned infants as a result of diet and poor nutritional practices; the possible role of fish fats and oils in connection with cardiovascular diseases; the effect of processing on the nutritive value of fish products.

GENERAL AGREEMENT ON TARIFFS AND TRADE

EIGHTEENTH SESSION OF THE CONTRACTING PARTIES:

The Contracting Parties to the General Agreement on Tariffs and Trade (GATT) held their Eighteenth Session in Geneva, May 15-19, 1961. A total of 38 nations have acceded to the GATT, and a number of other countries either have acceded provisionally or have other special relationships with the Contracting Parties.

The GATT, as the basic instrument guiding commercial relations among most of the principal trading nations of the world, is the cornerstone of United States commercial policy. The provisions of the GATT are designed to promote mutually beneficial international trade and thereby to raise living standards, expand productive employment, and utilize more fully the resources of the world. The various meetings of the Contracting Parties to the GATT, such as the Eighteenth Session, provide an international forum in which the Contracting Parties work to achieve the aims of the GATT, discuss trade policy problems, and attempt to resolve trade difficulties in a manner conducive to the growth rather than the reduction of trade levels.

The one-week session ran concurrently with the GATT tariff negotiations conference which began in Geneva, September 1, 1960.

Of the approximately 30 agenda items scheduled for consideration by the Contracting Parties, some of the more significant ones dealt with the Association of Finland with the European Free Trade Association; a review of latest developments on the special three-pronged program for the expansion of trade through (1) tariff negotiations, (2) an examination of agricultural protectionism, and (3) the maintenance and expansion of the export earnings of the less developed countries; and the removal of quantitative import restrictions.

The Contracting Parties heard reports at this Session on consultations the United States and other contracting parties have held with Italy and France on their remaining quantitative restrictions. Also, the GATT Committee on Balance-of-Payments Restrictions, of which the United States is a member, reported on the consultations held in April with several countries still imposing import restrictions for balance-of-payments reasons. The removal of quantitative restrictions by other countries has been a principal objective of the United States, and the work of this com-

International (Contd.):

mittee and other GATT mechanisms have been important factors in influencing the relaxation of such restrictions upon trade.

INTERNATIONAL JOINT COMMISSION

REPORT ON PASSAMAQUODDY TIDAL POWER PROJECT SUBMITTED:

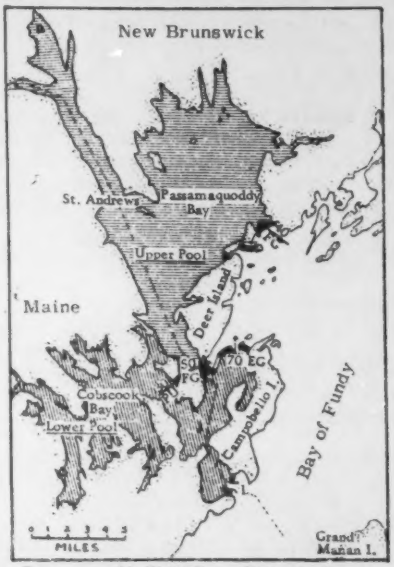
In a letter from the International Joint Commission dated April 10, 1961, the U. S. Department of State has received the "Report of the International Joint Commission, United States and Canada, on the International Passamaquoddy Tidal Power Project," dated April 4, 1961. The report released May 1, 1961, conveyed the Commission's findings that the tidal project, either alone or in combination with certain auxiliary power sources, will not permit power to be produced at a price which is competitive with the price of power from alternative available sources.

On August 2, 1956, the Governments of the United States and Canada in a Reference, directed the Commission to determine the estimated cost of developing the international tidal power potential of Passamaquoddy Bay, and whether the cost of such a development would permit the production of hydroelectric power at an economically feasible price. Passamaquoddy Bay separates the State of Maine from the Province of New Brunswick on the Atlantic Coast near the mouth of the Bay of Fundy.

The April 4 Report represents the final conclusions of the Commission in response to the Reference of August 2, 1956, which was submitted to the Commission in accordance with the provisions of Article IX of the Boundary Waters Treaty of 1909, and in light of the provisions of Public Law 401, 84th Congress, second session, approved January 31, 1956.

The Reference further directed the Commission to determine the effects which the project might have on the national and local economics in the area, as a result of the proposed construction, maintenance, and operation of the tidal power structures.

The Commission's Report determined that because of the relatively high cost of development of the tidal power potential, the project would not appreciably affect long-term industrial development in the area. This Report pointed out, however, that there would be substantial short-term benefits to the economies of Maine and New Brunswick during the six-year construction period which would result from estimated expenditures of over $200 million for goods and services if the project were carried out.



Passamaquoddy Tidal Power Projects plan.

The Commission found that the proposed project would have very little effect on the important sardine industry in the St. Croix River estuary of Passamaquoddy Bay, and only a minor effect on other fisheries. Were the project to be carried out, the Commission notes that re-location and modification of existing fisheries facilities, plus certain modifications in the design of the tidal structures, would minimize damage to existing fisheries.

The Commission's Report also noted that additional recreational facilities would be created by the formation of two large salt water lakes, and by the structures of the proposed tidal project itself. Navigation conditions in the St. Croix River estuary and at St. Andrews and other ports in the Bay area would be improved by the raising of the Passamaquoddy Bay high pool, and by the decrease in the tidal range. In addition, tidal dams, locks, and gates would provide suitable foundation on which an international highway could be built to connect present coastal high ways in Maine and New Brunswick.

Nevertheless, the Commission found that the Passamaquoddy Tidal Power Project is not economically feasible at the present time when evaluated by conventional methods of economic analysis as applied to hydroelectric projects. The Commission recommended that development of the project be viewed as a long-range possibility having better prospects of realization when other less costly energy resources available in the area will have been fully realized.

The Governments of the United States and Canada are studying the findings and recommendations of the International Joint Commission in the April 4 Report, and will withhold comment until their studies are completed.

Note: Also see Commercial Fisheries Review, June 1960 p. 68, May 1960 p. 36, March 1960 p. 38.

INTERNATIONAL NORTH PACIFIC FISHERIES COMMISSION

COMMITTEE ON BIOLOGY AND RESEARCH: WORKING PARTY ON OCEANOGRAPHY MEETS:

The Committee on Biology and Research of the International North Pacific Fisheries Commission (INPFC) was authorized to make a joint report on oceanography of the area of interest to the Commission and correspondents were named by Canada, Japan, and the United States to prepare such a joint report. The report has been carried on by mail since it was not possible for the Working Party members to meet in 1960. But since it was considered essential that all authors come together to coordinate their contributions and prepare the final report, the Working Party on Oceanography of the Commission's Committee on Biology and Research met in Nanaimo, British Columbia, Canada, May 15-June 15, 1961.

NORTHWEST ATLANTIC FISHERIES COMMISSION

ANNUAL MEETING HELD IN WASHINGTON, D. C.:

The 1961 Annual Meeting of the International Commission for Northwest Atlantic Fisheries was held June 5-10, 1961, in Washington, D. C. The meeting was presided over by the Commission's Vice-Chairman, the Deputy Minister of Fisheries for Canada. All sessions of the meeting were held in the U. S. State Department Building.

The Annual Meeting was directly preceded by the following meetings held at the U. S. Bureau of Commercial Fisheries Biological Laboratory, Woods Hole, Mass.:

(1) Symposium on Marking, May 24-27.

(2) A meeting of the Group on Environmental Problems on May 27.

(3) Meetings of the Standing Committee on Research and Statistics and of Advisers Groups, May 29 to June 2.

Meetings of the Continuing Working Party on Fishery Statistics in the North Atlantic Area were held on June 6-8 during the Annual Meeting in Washington.

NORTHWEST PACIFIC FISHERIES COMMISSION

JAPANESE AND SOVIETS HOLD FIFTH ANNUAL MEETING:

At the fifth annual meeting of the Japanese-Soviet Commission for Northwest Pacific Fisheries, the 1961 Japanese North Pacific salmon quota--major issue in the discussions--finally came up on the agenda in mid-April. Both sides predicted an early agreement. The Japanese Minister of Agriculture and Forestry predicted that this year's settlement would be earlier than in 1960, when the final agreement was signed on May 18, but he also indicated that there would be no decrease in the Japanese salmon quota which in 1960 was 67,500 metric tons in the Northwest Pacific Commission area.

On the other hand, reports indicate that the Soviet Union plans an increase in its North Pacific salmon catch. Russia caught 70,000 tons in 1960 and reportedly told Japanese negotiators that it planned to catch 80,000 tons this year. The Soviets demanded that Japanese catches in restricted zones be held to 50,000 tons, with catches in unrestricted zones held to 70,000 tons. Japan caught 140,000 tons in all zones last year.

On April 7 the crab quota in the North Pacific was tentatively established, with Japan allotted 260,000 cases (48 6.5-oz. cans) and Russia 195,000 cases (96 6.5-oz. cans). The 1961 quotas are identical to those for 1960.

International (Contd.):

Japan's West Kamchatka crab fleet was reported ready at Hakodate in mid-April awaiting word of agreement before sailing. Meanwhile, early in April the 5,746-ton Tokei Maru with a crew of 404 left port for crab fishing in Bristol Bay off Alaska.

The Soviet delegates early in April charged the Japanese with "obstructing" the discussions when the Japanese refused to expand the area of treaty control south of the 45th parallel. The Russians charged that up to a thousand Japanese vessels fished in that area and had doubled their salmon take compared to the catch five years ago.

After lengthy discussions, the Japanese early in the meeting agreed to use nets with larger mesh during the 1961 and 1962 gillnet salmon seasons in the North Pacific. The agreement states that half the length of salmon fishing nets to be used in all fishing areas in the North Pacific should have a mesh of more than 65 millimeters (about 2.6 inches) in size.

Japan, in the meantime, because it had not reached agreement with the Soviets regarding the 1961 salmon catch quota for the North Pacific, on April 19 authorized Japanese salmon fishing fleets (4 fleets, each consisting of one mothership and fishing vessels) to begin operations in waters outside the Soviet-Japanese fishery treaty zone. Some Japanese officials reportedly suspected that the Soviets were trying to utilize concessions on catch limits within the restricted zone as a lever to induce Japanese agreement to an expansion of the restricted area southward of the zone (south of 45° north latitude). In any event, the Japanese Government decided not to hold up any longer the sailing of the fleet even though it is recognized that such action could prejudice chances of Soviet-Japanese agreement in their current negotiations. The Japanese, however, have announced that they will exercise voluntary controls on their total catch in line with the catches of previous years.

UNITED STATES REPRESENTED AT CONFERENCE ON REGIONAL FISHERIES ORGANIZATION FOR WEST AFRICA

The United States was represented at an international conference concerning the establishment of a regional fisheries organization for West Africa. The conference was held in Dakar, May 15-20. It was called by the Food and Agriculture Organization (FAO) for the purpose of organizing the new nations and the remaining colonial governments of the African Atlantic coast into a regional council for the interchange of scientific and technical information on fisheries, similar to the FAO's Indo-Pacific Fisheries Council in southeastern Asia.

The convening of the Dakar conference by FAO has resulted from a recent rapid growth of interest in the fishery resources of the eastern tropical Atlantic on the part of the fishing industries and governments of a number of countries. The waters of the region have received comparatively little scientific study, but available oceanographic and biological evidence indicates that they are rich in fish which may contribute importantly to the economic development of the West African nations and dependencies, and to the protein nutrition of their peoples.

Of especial interest to the United States fishing industry and to the tuna biologists of the Bureau are the major developments in tuna production in the eastern Atlantic in the past few years. Tuna landed in West African ports by Japanese and European fishermen are being processed in United States canneries in Puerto Rico, and a number of United States tuna vessel operators are testing the applicability of their fishing methods to the conditions on the African fishing grounds.

WHALING

ANTARCTIC WHALING OUTPUT HIGHER FOR 1960/61 SEASON:

Whale oil production in the 1960/61 Antarctic pelagic season was up 18,000 short tons from the previous season.

Of the 5 countries participating in Antarctic whaling, larger catches were reported this year by Norway, Japan, and the U.S.S.R. The Netherlands and the United Kingdom reported smaller output.

Antarctic Whale and Whale Oil Production, 1960/61 and 1959/60

	Blue-Whale Units		Whale Oil Production	
	1960/61 1/	1959/60	1960/61 1/	1959/60
	(Units)		(Short Tons)	
Norway	5,197	4,568	124,246	109,834
Japan	5,980	5,217	111,134	103,096
U. S. S. R.	2/2,800	2,789	2/67,150	63,070
United Kingdom	1,455	1,900	37,958	44,315
Netherlands	1,011	1,038	24,176	26,323
Total	16,443	15,512	364,664	346,638

1/Preliminary.
2/Partially estimated.

International (Contd.):

Norway continues to be the world's leading producer of whale oil, but Japan is rapidly becoming a close second. In recent years, the U. S. S. R. has greatly expanded whaling operations and in 1959/60 passed the United Kingdom in whale oil output.

Twenty-one expeditions operated during the 1960/61 season--one more than in the previous year. Both Japan and the U. S. S. R. added an expedition, and the United Kingdom dropped one. Total country expeditions were Norway 8; Japan 7; U. S. S. R. 3; the United Kingdom 2; and the Netherlands 1.

Because the Antarctic pelagic whaling countries could not reach agreement on sharing of the permitted catch, no preseason catch plan was set for the 1960/61 season. The International Whaling Commission requested each country to limit the size of its catch to a level no greater than the previous season. The 1959/60 catch plan, totaling 17,540 blue-whale units, was Norway, 5,800; Japan, 5,040; U. S. S. R., 3,000; the United Kingdom, 2,500; and the Netherlands, 1,200. (Foreign Crops and Markets, U. S. Department of Agriculture, May 22, 1961.)

WORLD'S 1959 SHRIMP PRODUCTION

The world's commercial production of shrimp in 1959 was estimated at 766 million pounds (heads-off weight). The larger shrimp-producing countries are in the Asian and North American continents and landings in those areas accounted for about 80 percent of the 1959 world production. The remaining 20 percent was largely made up of production in European and South American countries.

The 1959 world production of shrimp was estimated to be about 19 million pounds more than the previous year. The more significant increase was in the United States and Mexican catches although production was up for a number of other North and South American countries. European shrimp production in 1959 increased about 5 million pounds from the previous year, but was much lower for several of the Asian shrimp-producing countries.

Estimated World Production of Shrimp, 1948, 1953, 1958, and 1959

Continent and Country	1959	1958	1953	1948
	(Million Pounds--Heads-off Weight)			
Africa:				
Egypt	7.5	7.0	2.0	0.9
Morocco	1.6	1.5	0.1	0.1
Total	9.1	8.5	2.1	1.0
Asia:				
Burma	6.8	8.7	10.3	1/
China (Mainland)	2/120.0	2/120.0	1/	1/
Hong Kong	0.8	3.8	0.3	0.1
India	85.9	111.8	119.0	48.5
Iran	1.6	0.6	2/	1/
Japan	78.3	74.1	54.1	44.0
Korea	25.7	23.0	27.7	43.3
Pakistan	19.9	19.5	18.2	3/
Philippine Republic	5.9	5.3	2.1	1.3
Taiwan	6.7	5.3	3.3	1/
Thailand	2/11.0	11.0	11.3	10.7
Vietnam	6.6	6.6	1/	1/
Total	369.2	389.7	246.3	147.9
Europe:				
Belgium	1.4	1.0	2.6	1.8
Denmark	3.1	2.2	1.2	1.2
France 4/	4.1	4.6	5.1	3.9
Italy	3.9	4.2	3.3	2.2
Netherlands	17.2	14.3	21.3	10.5
Norway	12.7	9.5	5.0	2.5
Spain	18.3	17.4	12.3	14.6
Sweden	4.2	2.8	1.7	1.0
United Kingdom	2.5	2.8	2.5	3.4
West Germany	33.7	37.1	52.6	18.6
Total	101.1	95.9	107.6	59.7
Oceania:				
Australia	3.9	2.8	2.0	2/
North America:				
Cuba	1.9	1.6	1.7	1/
El Salvador	2.1	1.4	0.1	1/
Mexico	80.1	69.1	45.6	44.6
Panama	8.9	7.5	0.9	0.1
United States	142.9	127.2	154.9	99.4
Other	2/4.0	3.7	2.1	0.3
Total	239.9	210.5	205.3	144.4
South America:				
Argentina	1.1	1.8	7.2	1.7
Brazil	25.7	24.3	10.5	1/
Colombia	3.5	2.0	0.3	1/
Ecuador	7.5	6.0	0.4	1/
Surinam	1.3	1.2	1/	1/
Venezuela	2.1	1.5	0.4	0.1
Other	2/1.5	0.6	0.9	0.1
Total	42.7	37.4	19.7	1.9
Grand Total	765.9	744.8	583.0	354.9

1/Data not available.
2/Estimated.
3/Pakistan included with India.
4/Algeria included with France.
Note: Includes all countries except those with small or limited production.
Sources: Food and Agriculture Organization series, Yearbook of Fishery Statistics; U. S. Fish and Wildlife Service, Survey of Shrimp Fisheries of Central and South America, Special Scientific Report - Fisheries, No. 235 and Foreign Shrimp Fisheries Other Than Central and South America, Special Scientific Report - Fisheries No. 254; and U. S. State Department Foreign Service dispatches.

Angola

FISH-OIL INDUSTRY AND TRADE, 1959-1961:

Angola's production of fish oil increased from 4,900 metric tons in 1959 to 6,000 tons in 1961. Total production is diverted to exports, the bulk of which is shipped to Western Germany (tables 1 and 2).

Table 1 - Angola's Supply and Distribution of Fish Oil, 1959-1961

	1961 1/	1960 1/	1959
	(1,000 Metric Tons)		
Stocks, January 1	0.6	0.6	0.8
Production	6.0	5.0	4.9
Imports	-	-	-
Total Supply	6.6	5.6	5.7
Consumption	Neg.	Neg.	Neg.
Exports	6.0	5.0	5.1
Stocks, December 31	0.6	0.6	0.6
Total Distribution	6.6	5.6	5.7

1/Estimated.

Table 2 - Angola's Exports of Fish Oil, 1959-1960

Country of Destination	1960 1/	1959
	(1,000 Metric Tons)	
West Germany	4.2	3.3
Denmark	0.5	-
Other	0.4	0.7
Total	5.1	4.0

1/Estimated.

The average price of fish oil in Angola was 7 U. S. cents a pound in 1959 and 1958, and 8 cents in 1957. (U. S. Foreign Agricultural Service Report, Leopoldville, April 13, 1961.)

Note: Values converted at rate of 28.52 escudos equal US$1.

Australia

DEMAND GOOD FOR NORWEGIAN FISH STICKS AND PORTIONS:

Sales in Australia of fish sticks imported from Norway trebled in the last nine months of 1960. This was stated in Sydney by the managing director of the firm which is the sole Australian agent for Norwegian fish. He said the spectacular demand for fish sticks had occurred chiefly in Melbourne and also in Adelaide and Perth.

The Australian states, "Our fish sticks are made from the choicest haddock caught in the icy waters of Norway.

"Our experience over the past three years shows that haddock is the type of fish preferred in Australia--not only in fish sticks but in other products as well.

"Cod is okay in U. S. A. but is not a good seller in Australia.

"When we switched from cod to haddock our fish sticks sales began to climb," he said. He added that a small increase in the price of haddock fish sticks had not slowed sales. On the contrary, Melbourne housewives bought more.

"We have found that provided quality is maintained the average housewife doesn't mind paying a little extra for fish. On the other hand, we have found that if you drop the price the housewife thinks there's something wrong with the product and sales go down. But you must maintain quality," he said.

A year-round advertising campaign on television and radio was helping considerably to push the sales of Norwegian fish in Australia. The present advertising campaign in Sydney is restricted to point-of-sales material (window stickers, branded cellotape, jumbo cartons, etc.). According to the Australian representative of the Norwegian exporter, the crumlets (breaded fish portions) were the biggest-selling line of any frozen fish in consumer packs in Melbourne and Adelaide.

Another product he predicts will sell almost as well is flounder cutlets (square portions of breaded quick-frozen fish), which are sold in pound consumer packs containing eight portions per pack. The flounder portions are imported from Denmark. (Fish Trades Review, February 1961.)

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FOREIGN TRADE IN MARINE OILS, FISCAL YEARS 1958/59-1959/60:

Australian imports of all marine-animal and fish oils increased in fiscal 1959/60 as compared with 1958/59. Whale-oil imports increased by 11 percent, cod-liver oil (in-

Table 1 - Australia's Imports of Marine-Animal and Fish Oils, Fiscal Years 1958/59-1959/60

Item	1959/60	1958/59
	(Imperial Gallons)	
Whale oil	1/353,677	1/317,783
Cod-liver oil (incl. refined)	64,504	58,620
Fish oils (unrefined) N.E.I. incl. penquin & seal	123,120	87,286
Marine-animal oils, N.E.I.	46,760	29,936
Total	588,061	493,625

1/Includes 272,128 gallons from Norfolk Island in 1959/60 and 256,903 gallons in 1958/59.
N.E.I. - Not elsewhere included.

Australia (Contd.):

cluding refined) by 10 percent, fish oils (unrefined) and penguin and seal oil were up 41 percent, other marine animal oils increased by 56 percent--the combined imports of these oils increased by 19 percent (table 1).

Table 2 - Australia's Exports of Marine-Animal and Fish Oils, Fiscal Years 1958/59-1959/60

Item	1959/60	1958/59
	(Imperial Gallons)	
Whale oil	3,055,652	3,372,748
Other marine-animal and fish oils	6,151	30,162
Total	3,061,803	3,402,910

Most of Australia's exports of marine-animal oil is made up of whale oil. Total exports of that oil decreased by 11 percent in 1959/60 as against 1958/59, and is expected to decrease even further in 1960/61 due to a smaller catch. Exports of other marine-animal oils and fish oils fell sharply in 1959/60 (see table 2). (U. S. Foreign Service dispatch, Canberra, April 21, 1961.)

* * * * *

GOVERNMENT RULING CONFIRMS BAN ON IMPORT OF FISHING VESSELS:

In reply to a request by a United States fishing vessel owner for permission to sell his vessel in Australia, the Australian Department of Shipping and Transport states:

Under the Customs (Prohibited Imports) Regulations, the prior approval of the Minister for Shipping and Transport is required before a vessel of any description can be imported into Australia. It is the policy of the Commonwealth Government to support the Australian shipbuilding industry, both by the payment of a subsidy of up to 33⅓ percent of costs in the construction of vessels over 500 tons and by the imposition of a customs duty on smaller vessels.

Consistent with the Government's policy of supporting the shipbuilding industry, which is at present in need of additional orders, the Minister has in most cases refused to permit the importation of new or secondhand vessels into Australia, except in special circumstances such as small craft, replacements for marine casualties, or prototypes of vessels not at present built in Australia. (United States Consulate, Sydney, April 18, 1961.)

Note: Also see Commercial Fisheries Review, April 1961 p. 47.

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SHELLFISH LANDINGS, FISCAL YEAR 1959/60:

Australia's fiscal year 1959/60 shellfish landings (live weight) of 36.8 million pounds were much better than expected. The spiny lobster catch amounting to 28 million pounds topped the previous year's catch by more than 2 million pounds. Most of the increase was in the main fishing grounds in Western Australia. There was a fairly substantial increase ever the previous year in Tasmania production, and a smaller increase in Victoria and New South Wales production. The South Australian spiny lobster catch was the lowest since 1953/54.

Table 1 - Australia's Shellfish1/ Landings, Fiscal Years 1958/59-1959/60

Species	1959/60	1958/59
	(1,000 Lbs.)	
Spiny lobster2/	28,008	26,301
Shrimp:		
Greasy back	1,264	680
School	123	2,092
Tiger	3,875	679
King	1,493	2,280
Banana	662	974
Other	332	46
Total shrimp	7,749	6,751
Crab:		
Mud	359	906
Sand	685	
Total crab	1,044	906
Crayfish (fresh-water)	15	12
Total shellfish	36,816	33,970

1/Based on live weight.
2/Includes shovel-nosed lobster--39,430 pounds in 1959/60 and 25,394 in 1958/59.

The 1959/60 shrimp catch of 7.7 million pounds also increased substantially despite an earlier forecast of a lower harvest than the 6.8 million pounds landed in 1958/59.

Table 2 - Australian Spiny Lobster and Shrimp Species

Common Name	Scientific Name
Crayfish, marine (spiny lobster)	Jasus verreauxi Jasus lalandii Panulirus longipes
Lobster, shovel-nosed	Thenus orientalis
Prawn (shrimp):	
Greasy back	Metapenaeus mastersii
School	Metapenaeus macleayi
Endeavour	Metapenaeus endeavouri
York	Metapenaeus eboracensis
Tiger	Penaeus esculentus
King	Penaeus plebejus
Banana	Penaeus merguiensis
Rainbow	Parapenaeopsis sculptilis

The largest increase was in Tiger shrimp landings which were up 3.2 million pounds from the previous year, and the greasy back shrimp catch which increased 0.6 million pounds. The 1958/59 landings of other shrimp species dropped sharply from the previous year. (Australian Fisheries Newsletter, March 1961.)

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Australia (Contd.):

WHALE OIL SUPPLY, DISTRIBUTION, AND FOREIGN TRADE, FISCAL YEARS 1957/58-1960/61:

The Australian 1960 whaling season was marked by a further decline in the catch on the Western Australian coast. The 1960 baleen whale quota was set at 1,850 whales; 870 whales for the West Coast and 980 for the East Coast and Norfolk Island. The full quota was taken on the East Coast and at Norfolk Island, but the actual catch in Western Australia only totaled 545 humpback whales and two blue whales. In the fall of 1960, the comparatively small Western Australian catch reflected smaller production of whale oil and other products. The season opened on May 29 and ended on September 30, 1960. The yield of oil per whale was slightly lower than in 1959. The average yield fell from 52.29 barrels of oil per whale in 1959 to 51.13 barrels in 1960.

Australia's production of whale oil during the 1960 season amounted to 13,044 long tons as compared with 15,006 tons in 1959. Output of whale byproducts declined by 976 tons to 6,665 tons in 1960. As in previous years, the bulk of Australian whale oil production was exported. Exports during fiscal year (July 1-June 30) 1959/60 were to Western Germany, Italy, the United Kingdom, and the Netherlands, and totalled 3,055,652 Imperial gallons. In view of the smaller catch of whales in 1960, exports are likely to be somewhat smaller for fiscal year 1960/61 and may be around 2.6 million gallons. The relatively small quantity retained in Australia is largely used in the margarine industry.

Australia's total supply of whale oil (opening stocks, production, and imports) decreased from 5.1 million Imperial gallons in fiscal year 1957/58 to 4.3 million gallons in 1958/59. A further decline to 3.8 million gallons in 1959/60 and 3.3 million gallons in 1960/61 is anticipated.

Total distribution of whale oil (exports, domestic consumption, and end-of-year stocks) is also expected to decrease from an actual 5.1 million gallons in 1957/58 to an estimated 3.3 million gallons in 1960/61. The use of whale oil in margarine production has decreased since 1958; it is expected to level off at 550,000 gallons for 1959/60 and 1960/61 (table 1).

Table 1 - Australia's Supply and Distribution of Whale Oil, Fiscal Years 1957/58-1960/61

Item	1960/61 2/	1959/60 1/	1958/59	1957/58
	(Imperial Gallons)			
Supply:				
Beginning year stocks 3/	135,916	150,385	300,893	904,176
Production 4/	3,129,256	3,599,634	3,901,360	4,118,640
Imports	80,000	81,549	60,880	79,693
Total supply	3,345,172	3,831,568	4,263,133	5,102,509
Distribution:				
Exports	2,600,000	3,055,652	3,372,748	4,021,710
Domestic consumption:				
Margarine	550,000	550,000	650,000	689,706
Other	90,000	90,000	90,000	90,000
End of year stocks 3/	105,172	135,916	150,385	300,893
Total Distribution	3,345,172	3,831,568	4,263,133	5,102,309

1/Estimate, with exception of production and foreign trade data.
2/Forecast.
3/Estimated.
4/Includes Norfolk Island production.

Total exports of whale oil from Australia declined from 3.4 million gallons in 1958/59 to 3.1 million gallons in 1959/60. The United Kingdom was the main buyer of whale oil in fiscal year 1958/59--bought 57 percent of total marine oil exports; however, shipments to the United Kingdom fell off in 1959/60 and West Germany became the leading buyer -- bought 65 percent of the total whale oil exports (table 2). (U. S. Foreign Service Dispatch, Canberra, April 27, 1961.)

Table 2 - Australia's Imports and Exports of Whale Oil, Fiscal Years 1958/59-1959/60

Country of Origin or Destination	1959/60	1958/59
	(Imperial Gallons)	
Imports:		
United Kingdom	-	5,427
Norfolk Island	272,128	256,903
Cocos Islands	45,600	-
New Zealand	30,226	55,362
Other Commonwealth Countries	5,613	-
German Federal Republic	-	91
Norway	110	-
Total Imports	353,677	317,783
Exports:		
United Kingdom	280,253	1,917,200
New Zealand	440	-
Union of South Africa	-	1,892
Belgium and Luxemburg	-	92,114
German Federal Republic	1,986,232	429,235
Italy	536,121	433,675
Netherlands	252,606	479,546
For orders	-	19,086
Total Exports	3,055,652	3,372,748

Note: See Commercial Fisheries Review, January 1960 p. 61, October 1959 p. 48.

Belgium

CANNED FISH PRICES, FEBRUARY 1961:

Canned fish prices (c.i.f.) at Antwerp, Belgium, as of February 1961 are shown in table 1.

Table 1 -Belgium's Canned Fish Prices, c.i.f. Antwerp, February 1961

Product	BFrancs/ cs.	US$/ cs.
Canned pink salmon:		
Japan 96 1/4-lb. cans/cs.	671	13.42
" 48 ½-lb. cans/cs.	645	12.90
Canned tuna:		
Japan 48 7-oz. cans/cs.	385	7.70
" 48 3½-oz. cans/cs.	240	4.80
Peru 48 7-oz. cans/cs.	-	6.90
" 96 3½-oz. cans/cs.	-	8.70
Canned sardines in olive oil:		
Portugal 100 4.4-oz. 1/cans/cs.	495-510	9.90-10.20
Morocco 100 4.4-oz. 1/cans/cs.	430	8.60
Canned pilchards:		
Japan & U. S. 48 15-oz. cans/cs.	4.26	8.52
" " 96 7½-oz. cans/cs.	4.90	9.80
Canned mackerel:		
Portugal 100 4.4-oz. 1/cans/cs.	850-880	17.00-17.60
Japan 100 4.4-oz. 1/cans/cs.	535-540	10.70-10.80

1/ ¼-club, 125 grams net.

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IMPORTS OF CANNED FISH, 1959:

During 1959, Belgium imported close to 16,000 metric tons of canned fish valued at about US$9.3 million. The principal supplier was Japan with 6,303 tons valued at $3.6 million, followed by Portugal with 4,838 tons valued at about $2.8 million. Canned fishery products from the United States amounted to only 395 tons (valued at $157,100) of California sardines or pilchards, 35 tons of salmon (valued at $40,300), and 2 tons of unclassified fishery products valued at $1,200. Portugal was Belgium's principal source of true sardines and Japan the chief supplier of canned salmon.

Table 1 - Belgium's Imports of Canned Fish by Origin, 1959

Country of Origin	Sardines		Pilchards		Salmon		Other		Total	
	Qty.	Value	Qty.	Value	Qty.	Value	Qty.	Value	Qty.	Value
	Metric Tons	US$ 1,000	Metric Tons	US$ 1,000	Metric Tons	US$ 1,000	Metric Tons	US$ 1,000	Metric Tons	US$ 1,000
United States	1/	0.1	395	157.1	35	40.3	2	1.2	432	198.7
Canada	23	9.2	-	-	966	881.1	-	-	989	890.3
Portugal	3,569	1,967.4	8	5.2	-	-	1,261	779.7	4,838	2,752.3
South Africa	-	-	216	67.2	-	-	-	-	216	67.2
Japan	2	1.4	1,677	557.1	3,699	2,552.6	925	515.6	6,303	3,626.7
Yugoslavia	270	123.9	1/	0.2	-	-	537	328.6	807	452.7
Netherlands.....	5	7.8	82	27.6	60	51.1	579	192.8	726	279.3
Morocco	90	41.8	-	-	-	-	-	-	90	41.8
Peru	-	-	-	-	-	-	468	241.9	468	241.9
Norway.....	5	4.5	1/	0.1	1/	1.1	564	392.8	569	398.5
Spain	51	31.2	-	-	-	-	177	116.0	228	147.2
Others	24	18.5	7	2.4	12	12.0	288	191.4	331	224.3
Total	4,039	2,205.8	2,385	816.9	4,772	3,538.2	4,801	2,760.0	15,997	9,320.9

1/Less than ½ ton.

SHRIMP FISHING INDUSTRY:

Brazil's fishing grounds consist of all the coastal waters of Santa Catarina and Parana. With modern equipment, efficient shrimp fishing can be conducted several miles from the coast, but most fishermen work only in tidal areas within a few hundred yards of the shore. Shrimp are available all year round, but the catch by current primitive methods is greatly reduced during the rainy season November through March . Heavy run-off during that period brings very muddy waters into the shrimp fishing areas.

Brazil

JAPANESE FISHERMEN HOPE TO ESTABLISH FISHING COMPANY AND FISH OFF BRAZIL:

Three Japanese fishermen from Choshi, Chiba Prefecture, are reported to be planning on forming a fishing corporation and building three large steel vessels of 240 tons each for tuna fishing off Recife, Brazil. They hope to enter into an arrangement with the Japanese-Brazilian joint company established in Brazil, to which one of the fishermen is already delivering tuna using a 250-ton vessel.

All three are reported to be excellent fishermen. They are presently seeking approval from the Japanese Fishery Agency to proceed with their plans. (Suisan Keizai Shimbun, April 26, 1961.)

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Brazil (Contd.):

There are 6 or 7 important shrimp processing plants in Santa Catarina, but none in Parana. Although 5 of these plants have some freezer equipment which is mostly old, inefficient, and of low capacity, 90 percent of the processed shrimp is either dried or canned. Canned shrimp are peeled and deheaded; dried shrimp have the heads on. There are no firms at this time known to be using modern processing equipment for peeling and deveining or removing heads. There are several firms, however, which would be interested in such equipment if they thought they could develop large markets to justify the expanded capacity.

One of the two processing plants in Santa Catarina with the biggest freezer capacity has equipment for freezing about 4,500 pounds in 24 hours, and has 80 tons of frozen storage capacity. It has no washing, deveining, peeling, or deheading equipment, and has no fishing boats of its own. The freezer capacity of the other plant is unknown. However, it does have three DC-3's in which to transport its entire frozen catch (unwashed and unprocessed) to Sao Paulo, averaging 6 to 7 tons a week. This plant's freezing equipment was installed by Japanese technicians in the last two or three years. Except for this one plant, none of the Santa Catarina firms have reliable means of shipping frozen shrimp to large markets. For this reason all of their frozen output is sold locally. The larger plant uses its freezing capacity for all types of food products including meat, and not just for shrimp, but does not use its freezer to capacity.

Reliable statistics on total annual landings of shrimp are unavailable. Both very large and small sizes of shrimp are fished. The only locally-owned and operated shrimp fishing boats are dugout canoes. It is estimated that about 12,000 of these operate from the Santa Catarina and Parana coastline. These boats fish for all species of fish, and not just shrimp. In addition, a few large and fairly efficient shrimp boats operate along the coast. These are all based in Santos and the ownership is unknown, although it is believed they are all Brazilian-owned and operated with locally-recruited crews. The large boats have no freezer capacity and preserve their catch with ice and antibiotics. They can handle 20 to 30 tons each. They only land their catch in Santa Catarina or Parana when a sudden decline occurs in the Santos-Sao Paulo or Rio de Janeiro markets. They are kept informed of market conditions by radio. As far as it is known, there are no plans for local construction or purchase of large and more efficient shrimp vessels.

Most workers in Santa Catarina fish-processing plants receive between Cr$7,000 and Cr$12,000 (US$32.63-55.94) a month, with the average between Cr$7,500 and Cr$9,000 (US$34.96-41.95) a month.

Processing firms buy fresh shrimp with heads on from fishermen on a per-kilo basis.

The total annual shrimp catch could be considerably increased if a larger number of modern, and more efficient boats were used instead of the dugout canoes now in use. However, there is little likelihood that such expansion of capacity will occur unless Santa Catarina producers are convinced that they have steady markets, either domestic or foreign, and unless they are guaranteed reliable transportation facilities for their output. Although some firms have requested the Brazilian Government to finance the purchase of large vessels, and to establish regulations limiting local coastal shrimp fishing to local firms, the Government is not likely to agree to those requests. (United States Consulate, Curitiba, April 18, 1961.)

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SAO PAULO'S FISHING INDUSTRY EXPANDS IN 1960:

Fish caught in neighboring waters is unloaded at several points along the São Paulo coast, particularly at state-run fish depots, where the fishing vessels lay in for ice. The only production statistics available, however, are those of the Santos and Ubatuba fish depots, where an estimated 65 percent of the total 1960 fish catch was unloaded. These statistics indicate that 24,336 metric tons of fish were unloaded at those depots in 1960, 6,787 tons or 38.8 percent more than in 1959.

The growth of Sao Paulo's fishing industry, which was very limited between 1944 and 1953, was increased substantially in the last few years. Two of the factors that stimulated deep-sea fishing in recent years were the operations of Japanese vessels and crews and the installation in 1955 and 1959, under state supervision, of the Ubatuba and Santos fish depots. These two depots are supplying increasing quantities of ice to fishing vessels, contributing greatly to reducing the proportion of fish that spoil between the time they are caught and unloaded. The Ubatuba depot, which supplied 500 metric tons of ice in 1955, produced 1,210 tons in 1960, while the Santos fish depot, which started operating on a commercial basis in the last quarter of 1959, supplied 1,699 tons of ice in 1959 and 9,870 tons in 1960. A chain of ice-making and cold-storage facilities which are being put up by the São Paulo State Government at Iguape, Registro, Itanhaem, Peruibe, São Sebastiao, and Ilha Bela and scheduled to go into operation between 1960 and 1962, are expected to be important factors in the continued growth of fish production in the area. Statistics of fish unloaded and stored will be maintained at these depots and within the next two years the Secretariat of Agriculture will have accurate and complete statistics on fish production in the State of São Paulo.

The yield per vessel, both per trip and per man, is still generally low as compared with other countries, although some progress is being made. Official statistics on average yields of fish per vessel are not available. However, data on the productivity of a local sardine fishing company indicate that the yield per vessel increased from a monthly average of 87.5 tons in 1959 to 176.1 tons in 1960, an increase of 101.3 percent. The increase was due in part to more favorable fishing conditions (schools of sardines lying close to the coast) and to increased ice and storage facilities of the Santos fish depot.

Brazil (Contd.):

The city of São Paulo is the principal consuming center of fish shipped from Santos and Ubatuba and other points of the São Paulo coast. Statistics prepared by the Department of Animal Production indicate that of the 21,300 metric tons of fish unloaded at the Santos fish depot in 1960, approximately 80 percent were consumed in the city of São Paulo, nearly 15 percent were absorbed by the Santos market, while the remaining 5 percent went to other cities and towns in the interior of the State of São Paulo.

The city of São Paulo also absorbs fish which is trucked in from Rio de Janeiro and other producing centers. Consumption of fish in the city of São Paulo climbed from 9,520 metric tons in 1954 to 23,916 tons in 1959 and 26,416 tons in 1960, an increase of 177 percent in 7 years.

In contrast, fish consumption in the interior of the state is limited. In 1960, 111 interior towns consumed only 1,010 metric tons of fish. Over 25 percent of that quantity, or 259 tons, were absorbed in 10 towns with large Japanese communities, who consume substantial quantities of fish as part of their diet.

Average prices of fish sold in the city of São Paulo in 1960 were 42.4 percent higher than 1959. This is 11.8 percent more than the average rise in the price of other foodstuffs.

One of the Government-sponsored programs which has given good results is the training in deep-sea fishing techniques given to young fishermen at the Maritime Fishing Institute at Santos, where the number of students has risen from 15 in 1955 to 240 in 1960. Fishing schools will also be opened at Ubatuba and Iguape in the near future. Another project under study by the Department of Animal Production is the setting up of a government fund to finance the purchase by fishermen and cooperatives of modern vessels and gear, as the general lack of modern equipment is hampering the rapid development of the fishing industry. (United States Consulate, São Paulo, February 16, 1961.)

British West Indies

BARBADOS FISHING INDUSTRY GROWING: The Barbados fishing industry has been growing steadily in importance since 1954, when power-driven fishing launches were introduced to replace sailing vessels. Since that time, the annual fish landings have increased sixfold. During 1960, about 16 million pounds of fish were caught with an estimated value of $4 million; in 1959 a total of 6.7 million pounds valued at $1.7 million. Of the 16 million pounds caught in 1960, 62 percent were flying fish, 13 percent dolphin, 8 percent shark, 4 percent albacore tuna, 3 percent marlin, 2 percent whahoo, 2 percent red snapper, and 63 percent miscellaneous.

The number of fishing launches dropped from 463 in 1959 to 458 in 1960. The introduction of power-driven launches has resulted in a decrease in the number of people employed by the fishing industry. A total of 1,700 people was employed in the industry during 1960 (1,100 offshore fishermen, 400 other fishermen, 50 fish market employees, and about 150 peddlers).

The fishing industry is now faced with a problem of oversupply. Although funds were appropriated in the 1960/61 budget for the construction of an abbatoir and fish freezing plant, construction has not as yet started. It is expected that work will eventually begin about the latter part of 1961, and that the plant will cost $750,000. A fish freezing plant would help to stabilize the market which is presently operating on a "feast or famine" basis. There is also the possibility of developing overseas markets for frozen flying-fish fillets. (United States Consulate report from Barbados, April 28, 1961.)

Canada

BIOLOGICAL RESEARCH NOTES: Canada's biological research was the subject of a panel discussion on April 11, 1961, at the Fisheries Council of Canada's annual meeting in Toronto.

Sea Lamprey: The sea lamprey, which reached the upper Great Lakes through the Welland Canal, has been held responsible for the virtual disappearance of the lake trout. Dr. F. E. J. Fry of the University of Toronto claimed that there has been clear evidence of the sea lamprey eliminating the

Canada (Contd.):

larger lake trout before they become ready to spawn. There is still dispute as to the extent to which the lamprey has affected the valuable food fish of the upper Lakes. Costly international efforts to control the lamprey are in progress. Dr. Kennedy of the London Station of the Fisheries Research Board of Canada considered that the success of these efforts is decidedly doubtful.

Lake Trout Crossed With Speckled Trout: K. H. Loftus, who heads up fisheries research in the Ontario Department of Lands and Forests, described a new kind of fish, obtained by crossing lake trout with speckled trout which gives some promise of being able to withstand the lamprey and to take the place of the lake trout.

Failures in Great Lakes Fisheries: There has been failure in the Great Lakes of other fisheries than that for lake trout. About 1925, the most important fish in Lake Erie, where the largest fisheries are, namely the lake herring or cisco, underwent a catastrophic decline in abundance. R. G. Ferguson, who is in charge of Lake Erie fisheries research for the Department of Lands and Forests, recounted the efforts to discover the cause of the collapse of the fishery. Evidence failed to show that this was to any extent the result of overfishing. There is as yet no inkling of what was the cause of the lack of fish. The only thing to be done was to turn to other kinds of fish, as the fishermen did. A similar event recently occurred in Northern Georgian Bay. With the lake trout gone, the commercial fishermen still had whitefish. But, then their numbers dropped and fishermen were forced out of business. Loftus said that again there was no evidence of overfishing and that some unknown cause must have been responsible for fishery failure.

Overfishing Not Responsible for Drop in Yield: The general belief that fishing is sometimes so heavy as to reduce the long-term yield of marketable fish has had slight substantiation anywhere in the world. Ferguson told how heavy fishing of whitefish in Pigeon Lake, Alberta, was definitely found to reduce the age of the fish, but if anything to increase rather than decrease the quantity available. Fry said that in the fishing experiment in South Bay, Manitoulin Island, the smelt were fished most heavily. This did not decrease the quantity, but it did decrease the size of the fish. Kennedy reported that the very heavy fishing of pike in Heming Lake increased the quantity, but reduced the size, the average age becoming 2 years instead of 4, and the fish had grown more rapidly. The general result, therefore, is that the heavier the fishing the more and better are the fish as long as they are not too small for marketing. This is a new and soundly based outlook for commercial fishing.

Smelt in Great Lakes: There was discussion of whether or not it is a good thing that smelt were introduced into Lake Michigan and spread to the other Lakes. Ferguson maintained that it is, that in Lake Erie they are much appreciated by sports fishermen, and the commercial fishermen have developed a profitable method of harvesting them. Fry argued that, at least in colder lakes, they had probably done more harm than good. If they are to be considered detrimental, Kennedy claimed that there is not the slightest chance of getting rid of them. Any conceivable measures for their removal would entail utterly prohibitive cost. Loftus was able to see that the smelt could be a great asset, provided that fishing methods are improved and markets are found for them.

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FISH SOLUBLES USED TO STOP SOIL EROSION:

After extensive studies, the British Columbia Research Council has found how to start vegetation on previously sterile slopes. Laboratory work and practical field trials have shown that by applying grass seed and fish solubles together, followed by a spray of lime, erosion can be stopped and a vigorous grass cover established. The process is not expensive.

The problem of heavy erosion of cuts and fills on new highways has plagued highway engineers everywhere. Erosion of sandy soil clogs drainage ditches and plugs culverts, causing high maintenance costs. Difficulty has always been experienced in starting a cover of vegetation to halt such erosion.

The superiority of the process over conventional methods is clearly seen in the experimental plots on the new Upper Level Highway in North Vancouver.

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Canada (Contd.):

FISHERIES ACT AMENDED:

An Act to Amend the Canadian Fisheries Act passed the House of Commons on May 2, 1961.

12-Mile Restriction to be Relaxed: Section 55 gives the Minister of Fisheries authority to allow large Canadian fishing vessels, presently banned from fishing inside 12 miles, to fish up to the 3-mile territorial sea limit in any area off the Canadian east coast mainland. In other words, the Department of Fisheries intends to use a zoning system--authorizing the abolition of the present 12-mile restriction in some areas but probably not in others. Prevalence of foreign draggers in some areas, and intensity of inshore fishing in others, will obviously be factors considered in making these decisions.

Definition of Fishing Vessel: The Act defines a fishing vessel as follows: "fishing vessel means any vessel used, outfitted or designed for the purpose of catching, processing, or transporting fish."

Pollution Penalties Increased: Fines have been increased--up to a thousand dollars for a first offense and up two thousand dollars for second and subsequent offenses, with provisions for an imprisonment term in place of, or in addition to, a fine.

Fisheries Department Authority Broadened: Section 34 has been amplified to clarify the regulation-making powers of the Department, and to broaden them. Under this section authority can be delegated to local authorities "to vary any close time or fishing quota that has been fixed by the regulation." This will permit faster action in making such changes and will be valuable in a number of the fisheries, particularly so in the West Coast salmon industry.

Other Changes: Power of a fishery officer to act as a justice of the peace has been removed.

A more comprehensive procedure is introduced for the seizure of any vessel, vehicle, or equipment that is used in violation of the Act.

New sections make it clear that the Department has full jurisdiction over Canadian fishing vessels operating on the High Seas. (Fisheries Council of Canada, Bulletin, May 15, 1961.)

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FOREIGN TRADE, UTILIZATION, AND PRODUCTION OF MARINE OILS, 1958-1960:

Foreign Trade: Canada exported a total of 15.7 million pounds of marine oils in 1958, 35.5 million pounds in 1959, and 31.7 million pounds in 1960. These exports consisted of herring oil, crude cod-liver oil, sunrotted cod-liver oil, pharmaceutical cod-liver oil, and whale oil. When the period 1958-1960 is compared with the 5-year average for 1950-1954, Canada's exports of herring oil increased greatly; crude cod-liver oil exports declined in 1958, but since then have improved; sunrotted cod-liver oil has increased slightly, but exports of whale oil practically ceased in 1960 because there was no whaling on Canada's west coast that year. Whaling operations were discontinued because of a labor-management dispute.

Table 1 - Canada's Marine-Oil Exports, 1958-1960 and 1950-1954 Avg.

Product	1960	1959	1958	5-Yr. Avg. 1950-1954
	(1,000 Pounds)			
Whale oil	64	4,790	3,360	7,958
Herring oil	23,028	23,261	7,094	14,563
Cod-liver oil (crude)	858	509	38	1,373
Cod-liver oil (sunrotted)	7,514	6,979	5,154	6,480
Fish oil	226	4	48	1/
Total	31,690	35,543	15,694	30,374

1/Not available.
Note: Totals in this table differ with those in table 2 due to conversion of table 2 data from Imperial gallons to pounds.

A heavy increase in shipments of industrial herring oil to the United Kingdom in 1959 continued through 1960 and accounted for most of the increase in total marine oil exports. These exports of industrial herring oil accounted for two thirds of Canada's total marine oil exports. The United States received an increasingly larger amount of pharmeceutical, crude, and sunrotted cod-liver oil from Canada each year from 1958-1960--amounted to 6.8 million pounds in 1960. Purchases of Canadian industrial herring oil and whale oil by the United States dropped off in 1960. United States purchases of Canadian fish oil declined from 48,000 pounds in 1958, to 4,000 pounds in 1959, but increased to 226,000 pounds in 1960 (table 2).

Canadian marine oil imports amounted to 15.9 million pounds in 1958, 6.3 million pounds in 1959, and 12.4 million pounds in 1960. The drop in total imports in 1959 was mainly due to a sharp decline (about 9.6 million pounds) in the amount of fish oil imported from the United States. In 1960, the United States was was replaced by the United Kingdom as Can-

Canada (Contd.):

Table 2 - Canada's Marine Oil Exports by Country of Destination, 1960-1958

	1960	1959	1958
	(1,000 Pounds)		
Cod-Liver Oil, Pharmaceutical, Crude and Sunrotted:			
United States	6,829	6,484	4,261
United Kingdom	1,543	996	931
Others	-	3	-
Total	8,372	7,483	5,192
Herring Oil, Industrial:			
United States	60	564	-
United Kingdom	21,760	21,287	2,867
Netherlands	597	-	2,666
Western Germany	597	1,411	1,563
Others	14	-	-
Total	23,028	23,262	7,096
Whale Oil:			
United States	64	634	838
United Kingdom	-	1,822	2,523
Netherlands	-	942	-
El Salvador	-	815	-
Western Germany	-	582	-
Total	64	4,795	3,361
Fish Oil:			
United States	225	4	48
Others	1	1/	1/
Total	226	4	48
Total Exports	31,690	35,544	15,697

1/Less than 1,000 pounds.

ada's main source of whale and sperm oil; however, the United States still remains as Canada's leading supplier of fish oil. Canada imported an average of 5.4 million pounds of marine oils over the 5-year period 1950-1954 (table 3).

Table 3 - Canada's Marine Oil Imports by Country of Origin, 1958-1960

	1960	1959	1958
	(1,000 Pounds)		
Cod-Liver Oil:			
United States	-	-	-
United Kingdom	1,353	2,099	2,169
Iceland	-	-	10
Norway	122	71	39
Netherlands	-	30	-
Total	1,475	3,200	2,218
Whale & Sperm Oil:			
United States	264	190	98
United Kingdom	298	40	69
Norway	67	68	37
Total	629	298	204
Fish Oil:			
United States	10,198	3,647	13,201
Japan	55	175	242
Norway	24	7	13
Total	10,277	3,829	13,456
Total Imports	12,381	6,327	15,878

Use in Margarine and Shortening: The use of marine oils in the manufacture of margarine increased in 1958 as against the average of the 5-year period 1950-1954, declined in 1959, and declined somewhat further in 1960. There has been an increase in the use of vegetable oils, especially soybean, and an increase in the use of animal oils, such as lard, for margarine.

On the other hand, the use of marine oils in the manufacture of shortening increased somewhat in 1958 as against the 5-year average of 1950-1954, fell off critically in 1959, but recovered by some 2 million pounds in 1960 (table 4). Competition from soybean in 1961 for both margarine and shortening should not be as strong, since soybean has lost its price advantage.

Table 4 - Canada's Use of Marine Oils in Margarine and Shortening Production, 1958-1960 and 1956-1960 Average 1/

	1960 2/	1959	1958	5-Year Avg. 1956-60
	(1,000 Pounds)			
Margarine:				
Production	166,641	152,473	145,607	144,015
Marine oils used	12,386	12,777	19,806	15,775
Percentage of total oils used	9.1	10.4	16.8	13.8
Shortening:				
Production	164,423	160,876	163,288	159,575
Marine oils used	7,526	5,379	16,741	15,464
Percentage of total oils used	4.6	3.3	10.0	9.7

1/Refined-oil basis.
2/Preliminary.

Production: Canadian Atlantic coast production of marine oils did not fluctuate significantly from 1958 to 1960, when compared with the 5-year average of 1956-1960. A decline was evident in 1959, but a slight recovery occurred in 1960.

Table 5 - Canada's Production of Marine Oils, 1958-1960 and 1956-1960 Average

	1960	1959	1958	5-Year Avg. 1956-60
	(1,000 Pounds)			
Atlantic Production:				
Cod Oil	8,006	8,037	5,954	7,626
Other	4,589	4,358	7,538	5,934
Total	12,595	12,395	13,492	13,560
British Columbia Production:				
Herring oil	16,489	45,564	39,626	30,481
Total Production	29,084	57,959	53,118	44,041

West Coast or British Columbia marine oil production increased in 1958 and 1959 as compared with the 5-year average of 1956-1960, but declined substantially in 1960 due to heavy stocks, labor disputes, and limited activity in the herring fisheries (table 5). (U. S. Foreign Agricultural Service Report, Ottawa, April 14, 1961.)

Note: Also see Commercial Fisheries Review, April 1961 p. 48, August 1960 p. 44.

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Canada (Contd.):

NEW BRUNSWICK FISH MEAL PRICES, MAY 1961:

Fish-meal prices (60-percent protein) quoted by the New Brunswick producers early in May 1961 averaged about C$102 a short ton ($1.70 a protein unit) for both exports and domestic sales. Due to short supply and good demand fish-meal prices have advanced steadily since February and as of early May were up about $20 a ton from the $81-84 a ton ($1.35-1.40 a protein unit) quoted by producers in mid-February this year. (United States Consulate, Saint John, N. B., May 12, 1961.)

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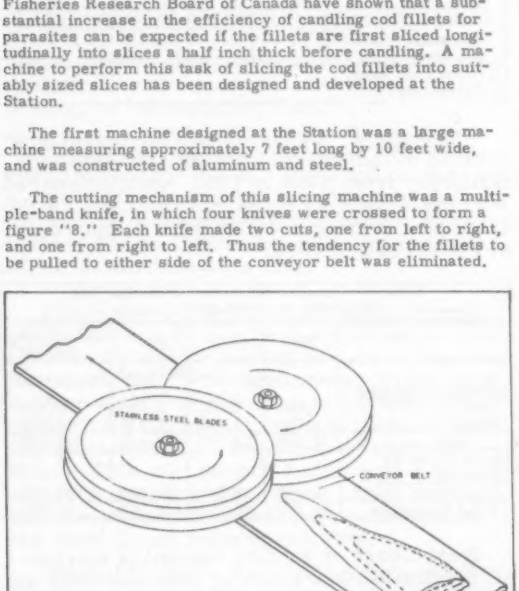
NEW SLICING MACHINE FOR LARGE COD FILLETS DEVELOPED:

Experiments by the Halifax Technological Station of the Fisheries Research Board of Canada have shown that a substantial increase in the efficiency of candling cod fillets for parasites can be expected if the fillets are first sliced longitudinally into slices a half inch thick before candling. A machine to perform this task of slicing the cod fillets into suitably sized slices has been designed and developed at the Station.

The first machine designed at the Station was a large machine measuring approximately 7 feet long by 10 feet wide, and was constructed of aluminum and steel.

The cutting mechanism of this slicing machine was a multiple-band knife, in which four knives were crossed to form a figure "8." Each knife made two cuts, one from left to right, and one from right to left. Thus the tendency for the fillets to be pulled to either side of the conveyor belt was eliminated.



Drawing showing blade arrangement on fillet slicing machine.

The fillets were fed to the cutting mechanism by a 24-inch wide white rubber conveyor belt. As the belt approached the knives, it turned downward at an angle of 45-degrees in order that gravity could assist the friction of the fillet on the conveyor belt in pushing the fillet through the band knives. Water sprays were used both to lubricate the band knives and to keep the conveyor belt free of particles of fish. Hardened steel guides kept the knives at the proper spacing. The bearings used were standard ball bearings for the knife pulleys and babbit bearings for the conveyor system.

Tests on the machine were carried out in various fish plants in Prince Edward Island and Nova Scotia. On the basis of the tests, it was decided that this machine was larger than desirable and that a smaller machine requiring less maintenance to the cutting mechanism would be advantageous in adapting the slicing machine to existing cutting lines. Accordingly, work was started on the design and construction of a more compact machine employing circular knives in place of the previously used multiple-band knives. This machine was the prototype for the present fillet slicing machine.

The frame of the fillet slicing machine is constructed of two sides cut from 1/4-inch-thick aluminum 65ST alloy plate, mounted side by side with front, bottom, and rear panels bolted together with 2-inch by 2-inch aluminum angle gussets. This forms a box-like structure upon which bearings, conveyor belt, and knives, etc. are mounted. All joints are sealed with an aluminum-asphalt type of cement and a drain pipe is provided in the bottom to lead off water used for lubrication of knives and clearing the conveyor belt.

The frame is supported on a single leg of 9-inch diameter aluminum tubing which is, in turn, welded to a base of aluminum plate. The height of this stand is such that the working surface of the feed conveyor belt is 36 inches above floor level. The stand is bolted to the frame with four aluminum bolts so that it can be removed for shipment.

There are two 8-inch wide white rubber conveyor belts. The first, or feed belt, feeds the fillets tail first, skin side down, into the rotating knives at a speed of 48 feet per minute. The second belt serves to remove the sliced fillets from the machine and convey them either to another belt, water trough, or other containers. The elevation angle of the discharge conveyor may be adjusted from horizontal to a maximum of 30 degrees.

Bolt belts are driven from the same 1/4-hp. totally enclosed gear motor by two $\frac{1}{2}$-inch pitch-chain drives, one going to the drive pulley of each conveyor. All shafts used in the conveyor system are 18.8 alloy stainless steel.

The bearings used for the conveyor system are of stainless steel construction, with an easily replaced, inexpensive liner of nylon forming the bearing surface. These bearings will operate satisfactorily with oil, grease, or water as the lubricant or if necessary without lubrication, with no danger of damage to shaft or bearing. Nylon bearings seem to be well suited for operation under wet or corrosive conditions such as are often found in fish cutting plants.

On the sides of the frame, the shafts and bearings for the rotary knives are bolted vertically. These consist of two cast aluminum housings supporting stainless steel shafts with two ball bearings each. Three 15-inch-diameter No. 420 stainless steel circular knives are attached to the top of each shaft with spacers fitted between the blades to keep them $\frac{1}{2}$ inch apart. The two sets of knives overlap by $3\frac{1}{2}$ inches. All the knives have single-bevelled cutting edges and are so arranged that the unbevelled sides of opposing blades rub lightly giving a cutting action similar to a pair of scissors, thus reducing the tendency of the blades to throw the fillet in the direction of rotation of the blades. The blades are lubricated with water to further reduce this tendency. The lower ends of the shafts are joined by a pair of spur gears to ensure that both blades turn at the same speed of 220 r.p.m. and in the correct direction relative to each other. One shaft is extended to accept a 12-inch-diameter V-belt pulley driven from a 1-hp. 1150-r.p.m. totally enclosed electric motor mounted vertically on the side of the machine.

Before assembly all aluminum components were degreased with trichlorethylene and given a phosphoric acid etch. This was followed by a thin coat of zinc chromate primer sprayed over the metal. The machine was then assembled and received one coat of alunimum paint and a finish coat of white enamel.

Tests have shown that approximately 80 percent of the large fillets split with this machine would be suitable for sale as fresh or frozen fillets. The remaining 20 percent, being for the most part small pieces cut from the top of the fillet, would be suitable only for use in fish blocks for use in the

Canada (Contd.):

manufacture of fish sticks. The assessment is arbitrary and would depend upon the size of package, market, and to some extent on the policy of the producer. (Canadian Fisherman, April 1961.)

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PRICES FOR BRITISH COLUMBIA HERRING OIL AT TORONTO, JANUARY 1960-MARCH 1961:

The following prices for British Columbia herring oil delivered at Toronto, Canada, were furnished on May 5, 1961, by the United States Foreign Agricultural Service in Ottawa: In Canadian cents per pound: 1960: January 8.58; February 8.32; March 8.25; October, November, and December 8.93. 1961: January 9.07; February 9.57; and March 9.67. (U. S. Foreign Agricultural Service Report, Ottawa, May 5, 1961.)

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STUDIES INDICATE "WETNESS" IN FISH FILLET BLOCKS DUE TO POOR DRAINING BEFORE FREEZING:

Many Canadian plant operators have trouble in producing fish fillet blocks for eventual use as fish sticks. Fish stick processors claim the blocks are too "wet" and that there is too great a loss in broken sticks during frying and packing. What is the source of this "wetness"? And how does it affect the fish sticks so that they are more fragile and easily broken?

The most obvious answer to the first question is the drip which is present in varying degrees in all frozen fish. This drip is the excess water which drips out of a piece of frozen fish on thawing and which is not absorbed by the tissues. In a freshly frozen good quality fish it may be less than 5 percent, but in one stored for several months at too high temperatures, it may be as high as 40 percent or even higher. It will be less in good quality fish than it will be with poor-quality fish. Slow freezing results in much more drip than rapid freezing. It used to be thought that this was because the slower rate of freezing resulted in the build-up of large ice crystals which then allowed the drip to escape on thawing. However, the real factor is the ability of the proteins to re-absorb the fluid released by the melting of ice crystals during thawing of the muscle tissue. Most fish muscle tissue contains about 80 percent water but only about 18 percent protein. Such factors as slow freezing, long storage, storage at temperatures above about 0° F., drying out or freezer burn, all damage the protein, and decrease its capacity to hold water.

These factors are those which affect the storage quality of frozen fish. The damage to the protein results in less moisture-holding capacity with increased drip and a parallel deterioration in texture, or increased toughness. As a result, when the sticks cut from these stored blocks are fried, considerable drip may be formed. This will result in some wetness and softness but since the protein will be tougher, the only effect should be to reduce the eating quality of the sticks rather than increase the incidence of broken sticks.

Drip may be almost eliminated by giving the fillets a brine dip prior to freezing. After a few seconds in brine, half saturated or less, the fillets absorb sufficient salt to increase the affinity of the muscle proteins for water. This effect is retained in the frozen product, and the drip during thawing is reduced to less than five percent unless very poor freezing and storage conditions are used. The use of brining, however, has declined in recent years. One reason may be that since much frozen fish is now cooked without prior thawing, the disadvantages of drip is avoided. Another is its tendency to promote fat oxidation and rancidity, which may become serious on long storage, or with fatty species. Brining, however, does eliminate the drip problem and should be useful in the non-fatty species where long storage is not required.

Considering this, it is necessary to look further for the main cause of broken fish sticks. Perhaps the answer may be found by taking a look at a typical fish block processing and packing line. As the fillets come from the skinning machines, they are usually quite wet. They may be carried in flumes and may also pass through a tank of brine or antibiotic before they arrive at the packing table. Almost always they accumulate somewhere along the way in piles, and inspection will show that the fish in draining build up puddles of fluid which does not runoff. They are put into the trays, which in the case of blocks are usually about 2 inches thick, about 11½ inches wide, and 21 inches long, holding about 17 pounds of fillets. Further draining occurs at this point, and a visible development of small and large water pockets may be observed among the fish in the tray. The extent of ac-

Canada (Contd.):

cumulation of this water obviously depends on the amount of draining of the fillets prior to being packed. But it also depends on the time elapsing between packing and going into the freezer. It is influenced also by the quality of the fish, a soft fish draining much more than a good-quality firm fish.

The measures necessary to minimize this formation of water pockets in the blocks are: (1) the fillets should be allowed to drain adequately before being packed. This can only be done in single layers, probably best on screens of some type if satisfactory sanitary measures can be found. (2) the trays should go immediately into the freezer after packing so that there is no time for drip formation and water build-up to occur in the blocks. In practice, the stringency of the measures to be employed will be governed by the type and quality of the fish being processed.

A question that comes up is, what happens to this water when the blocks are frozen? If there is a lot of drip and excess water, some of the juice gets squeezed out during the freezing between the edges of the cartons, and onto the plates. Deformation of the cartons may occur; the cartons and the freezers become very messy. Examination of the forzen blocks where excess water was allowed to accumulate will show ice pockets of varying size, sometimes 2 or 3 inches square, and $\frac{1}{2}$ inch or more in thickness. This, however, is of little concern to the operator at this stage--but what of the fish stick frying operator? He saws up the blocks, ice as well as fish, breads and batters the sticks, and fries them. But now the ice melts. Some sticks will have only water in one end or the other, but more may have a layer of ice between pieces of fillet causing them to separate and the sticks to break apart. Thus a much greater loss due to broken sticks will result than if good blocks were used. This is the most important cause for the complaints about "wet" fish blocks, and why the block-producing plants must strive to lessen the accumulation of liquid in the blocks just prior to freezing.

--By W. J. Dyer, Biochemist,
Halifax Technological Station
Fisheries Research Board of Canada,
(Trade News, November 1960.)

Chile

FISH MEAL AND OIL EXPORTS INCREASED SHARPLY IN 1960:

In 1960, Chile exported a record quantity of fish meal and its first sizable tonnage of fish oil. Fish meal exports in 1960 exceeded 31,000 short tons--an increase of 60 percent from 1959. Two-thirds of 1960 exports went to the United States.

Chilean Exports of Fish Meal by Destination, 1954-1960

Year	United States	Western Europe	Other	Total
	(Short Tons)			
1960	20,971	9,928	136	31,035
1959	7,159	10,000	1,903	19,062
1958	6,958	2,424	950	10,332
1957	1,160	3,696	111	4,967
1956	1,188	3,326	-	4,514
1955	5,918	3,621	-	9,539
1954	66	1,463	-	1,529

Chile exported substantial quantities of fish oil in 1960 for the first time. Shipments totaled 6,585 tons as compared with only 65 tons in 1959. Virtually all of 1960 exports went to Western Europe, principally to the United Kingdom, West Germany, and Norway. (Foreign Crops and Markets, U. S. Department of Agriculture, April 10, 1961.)

Note: Also see Commercial Fisheries Review, May 1961 p. 45.

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PRODUCTION, AND EXPORTS OF WHALE OIL, FISH OIL, AND FISH MEAL:

Chile's production of whale oil decreased from 7,409 metric tons in 1959 to 7,049 tons in 1960. Production is expected to increase to 7,500 tons in 1961. Domestic consumption of whale oil decreased sharply in 1960 as compared with 1959, while exports were up--but

Table 1 - Chile's Production and Disposition of Whale Oil, 1959-1961

Item	1961 (Forecast)	1960 (Preliminary)	1959 (Revised)
		(Metric Tons)	
Production	7,500	7,049	7,409
Disposition:			
Exports 1/	2,000	1,769	260
Domestic disappearance 1/	5,500	5,280	7,149
Total Disposition	7,500	7,049	7,409

1/Breakdown into edible and industrial not available; mostly used for domestic margarine production.

Note: (1) Marketing season begins January 1.
(2) Imports negligible and not listed; stocks data unavailable.

both are expected to increase slightly in 1961, (table 1). Of the total 1,769 tons of whale oil exported in 1960, 1,071 tons went to the United Kingdom, 556 tons to the Netherlands, and 142 tons to West Germany. These were Chile's largest whale oil exports in several years.

Chile (Contd.):

Total whale oil exports may amount to 2,000 tons in 1961. Chile exported 200 tons of whale meal in 1960, all of which was shipped to the United Kingdom.

Table 2 - Chile's Landings of Whales by Species, 1959-1960

Species	1960	1959
	(Number)	
Blue whale	131	80
Finback	52	70
Humpback	2	3
Sei whale	13	17
Right whale	-	1
Sperm whale	1,886	2,062
Total	2,084	2,233

The total number of whales captured fell from 2,233 in 1959 to 2,084 in 1960. A decrease in the number of sperm whales captured was the principal reason for this decline (table 2).

Table 3 - Oil and Other Products Obtained from Chilean Whale Catch, 1959-1960

Product	1960	1959
	(Metric Tons)	
Sperm oil	5,641	6,435
Whale oil	1,408	974
Total oil	7,049	7,409
Meat	200	250
Whale meal	1,400	1,500
Bone oil 1/	2,000	1,900

1/Principally from whales, but includes an unspecified quantity of bone oil from other marine animals.

Chile utilized her whale catch for the production of sperm oil, whale oil, meat, meal, and bone oil, but due to the drop in the whales taken in 1960, production of those products also decreased (table 3).

Chile's production of fish oil in 1960 was estimated at 2,534 tons as compared with 1,403 tons in 1959. There were no imports of fish oil either in 1959 or in 1960. In 1960, Chile exported 3,054 tons of fish oil. The United States was the least important buyer, purchasing only 201 tons (table 4). On the other hand, the United States was by far the most important buyer of Chilean fish meal with 12,018 tons out of a total 18,435 tons exported. This was a large increase over 1959, when the United States bought only 3,508 tons (table 5).

Table 4 - Chile's Exports of Fish Oil by Country of Destination, 1960

Destination	Quantity
	Metric Tons
United States	201
Germany	1,267
Norway	911
Denmark	675
Total	3,054

Chile's 1960 production of fish meal more than doubled that of 1958, increasing from 18,779 tons to 38,686 tons. Most of this increased production was consumed domestically in 1959 and 1960; however, exports increased sharply in 1960, rising to 18,436 tons.

Table 5 - Chile's Exports of Fish Meal by Country of Destination, 1959-1960

Destination	1960	1959
	(Metric Tons)	
United States	12,018	3,508
Belgium	450	491
Bolivia	2	1
France	900	-
Germany	905	3,121
Italy	750	-
Netherland	1,750	3,227
Mexico	100	300
Spain	1,500	-
United Kingdom	60	-
Venezuela	-	1,016
Total	18,435	11,664

Table 6 - Chile's Production, Consumption, and Exports of Fish Meal, 1958-1960

Year	Production	Domestic Consumption	Exports
		(Metric Tons)	
1960	38,686	20,250	18,436
1959	30,673	19,007	11,666
1958	18,779	9,373	9,046

There were no imports of fish meal in 1960. The total amount of fish meal to be exported in 1961 is expected to amount to 20,000 tons. (U. S. Foreign Agricultural Service Report Santiago, April 14, 1961.)

Costa Rica

FISHERMEN'S COOPERATIVE ESTABLISHED:

Sixty independent fishermen at Puerto Limon on Costa Rica's Caribbean Coast have formed a cooperative to be known as the "Cooperativa de Pesca de la Zona Atlantica." The provisional President and Secretary of the cooperative are two Costa Ricans of Chinese descent.

The cooperative was formed in January this year, but only now are the members actively attempting to implement the objectives of the group. It is the intent of the cooperative to develop fishing for spiny lobster to a much greater extent and, also, to assist the Government in the enforcement of conservation measures which it has promulgated to assure that the spiny lobster fishery will not be needlessly ruined by careless exploitation.

It is probable that the members of this cooperative will constitute a potential market

Costa Rica (Contd.):

for small marine engines, vessel hardware, and other products. Each of the 60 members of the cooperative owns his own vessel, and many of them are either planning or in the process of building new and larger vessels. (United States Embassy in San Jose, April 14, 1961.)

Denmark

FISH FILLETS AND BYPRODUCTS EXPORTS, JANUARY-FEBRUARY 1961:

Denmark's exports of fresh and frozen fish fillets and blocks in the first two months of 1961 totaled 11.4 million pounds, an increase of 97 percent as compared with the same period in 1960. Exports of cod and related species during the period were up 72 percent, and flounder and sole increased 67 percent from the same period in 1960. Herring added to the increased 1961 exports as none were shipped during the comparable period in 1960. Denmark shipped 1.1 million pounds of frozen fish fillets and blocks (almost entirely cod and related species) to the United States during the first two months of 1961.

Denmark's Exports of Fresh and Frozen Fish Fillets and Blocks, and Byproducts, January-February 1961

Product	January-February	
	1961	1960
	(1,000 Lbs.)	
Frozen Fillets and Blocks:		
Cod & related species	6,356	3,700
Flounder & sole	3,033	1,817
Herring	1,862	-
Other	136	258
Total	11,387	5,775
	(Short Tons)	
Byproducts:		
Fish meal, fish solubles, and similar products	5,182	4,672

Note: Shipments from the Faroe Islands and Greenland direct to foreign countries not included.

During January-February 1961, Denmark's exports of fish meal, solubles, and similar products were 11 percent more than the comparable two months in 1960.

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FISH MEAL AND SOLUBLES PRICES, APRIL 1-8, 1961:

During the week ending April 8, 1961, the only export order for Danish fish meal was a large order from Poland at 890 kroner a metric ton (US$117.07 a short ton) f.o.b. Esbjerg, the same price as was reported early in March for a similar order.

Moderate sales of fish solubles averaged 715 kroner a metric ton ($94.06 a short ton). This price represented a substantial increase over a late February price of about $68.40 a short ton. (United States Embassy, Copenhagen, May 12, 1961.)

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FISH-MEAL PRICE JUMPS DUE TO DEFAULT ON FUTURE CONTRACTS:

Due to the sudden bankruptcy of a Portuguese supplier of Peruvian fish meal on the Dutch market, the Dutch importer who had contracted with this firm for the delivery of 180,000 metric tons of fish meal during 1961 at a price of US$0.16 per 100 kilograms per 1 percent protein content ($94.35 a short ton, 65 percent protein) is now in serious difficulties because the importer is under contractural obligation to supply that amount at that price to Dutch end-users. Dutch fish-meal prices rose in a few days following this announcement to $0.24 per 100 kilograms per 1 percent protein content ($141.52 a short ton, 65 percent protein). Local fish meal traders predict that the cancellation of this large order will be a boost for Danish fish-meal production which has been extremely low in recent years because of competition from Peruvian fish-meal supplies. (United States Embassy, The Hague, Netherlands, May 2, 1961.)

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FISHERIES TRENDS, FIRST QUARTER 1961:

Better foreign demand for herring and other fish meals has improved expectations for Denmark's industrial fisheries. First quarter 1961 exports of fish meal were about 75 percent above the exports during the first quarter of 1960, and futures prices had jumped to 850 kroner per metric ton (US$111.37 a short ton) from the 700 kroner (US$91.72 a short ton) level which prevailed in the first part of 1961. The winter herring catch was running slightly ahead of 1960, as were the catches of most varieties of both industrial and food fish. Shipments of fresh and frozen fish were up about 20 percent.

With ever-growing demand for food fish, and with prospects for some recovery in the fish meal sector, Danish fishing circles now

Denmark (Contd.):

predict that 1961 output may reach the record 1959 level. At the same time they continue to press for action that will both expand and insure a continued market for those products within the European Economic Community.

First quarter 1961 exports of Faroe Islands' fish were slightly in excess of those recorded during the same period in the prosperous year of 1960. Meanwhile, the Greenland Trade Department was readying plans for increasing output of Greenland fish and shrimp during the forthcoming summer season. However, the current transportation strike may prevent construction of shrimp processing and freezing plants in Greenland during the coming summer as has been planned. (United Embassy in Copenhagen, April 19, 1961.)

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FOURTH INTERNATIONAL FISHERIES TRADE FAIR, 1962:

The 4th International Fisheries Trade Fair is scheduled in Copenhagen for April 14-23, 1962. As of early 1961 ten nations were represented among the firms who had already booked exhibition space.

The fisheries trades and the fishing industries are still the center of a whole group of interests to be represented in the Fair. A very comprehensive display of the newest developments in vessel motors will be shown.

The Fair is backed by the Danish Fisheries Council and the Chamber of Manufacturers. Details on the Fair are available from the International Trade Fair, Puggaardsgade 10, Copenhagen V, Denmark.

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SINGLE-BOAT FLOATING TRAWL EXPERIMENTS:

The Danish fish cutter Akaroa of 90 tons arrived in Norway with two Esbjerg fishermen to initiate experimental fishing to test a new type of single-boat floating trawl. The tests, which will take place on the grounds off Egersund, Norway, are supported by the Danish Ministry of Fisheries, which, according to the newspaper Vestkysten, has made available a guarantee of Kr. 20,000 (US$2,900)--Fiskets Gang, April 13, 1961.

Ecuador

SHRIMP EXPORTS, FIRST QUARTER 1960 AND 1961:

During the first three months of 1961 Ecuador exported about 1,391,000 pounds of shrimp. This amount was about 3.3 percent higher than the 1,347,000 pounds exported in the first quarter of 1960. The exports by months for the first three months of 1961 were: January 476,000 pounds, February 452,000 pounds, and March 463,000 pounds. (United States Embassy in Quito, May 1, 1961.)

France

FISH MEAL AND OIL PRICES, APRIL 1961:

Average fish meal and oil prices reported for April 1961 by the head of the French Fish Meal Manufacturers Association were as follows:

Fish Meal	Protein Content (%)	NF/Metric Ton	US$/Short Ton
French fish meal 1/	55	500	91.92
" " " 1/	60	540	99.27
" " " 1/	65	620	113.93
Peruvian fish meal 2/	60-65	590-600	108.42-110.25
Angola fish meal 2/	65	580-590	106.58-108.42
Norwegian herring meal 2/	73	730-750	134.14-137.82
Fish Oil	**Fatty Acid Content (%)**	**NF/Metric Ton**	**US$/Short Ton**
French oil (herring):			
Dark	10	550	101.06
Light	5-6	600	110.25

1/Ex-plant loaded aboard car or truck, 15 metric tons minimum.
2/Loaded aboard car French port, customs paid, 15 metric tons minimum.
Note: Values converted at rate of 4.937 new francs equal US$1.

(United States Embassy in Paris, May 19, 1961.)

German Federal Republic

COMPANY DEVELOPS FREEZING UNIT FOR FACTORYSHIP TRAWLERS:

A West German company in Bremerhaven has developed a new belt system for the continuous freezing of fish aboard its factory trawlers. The German company claims that the new equipment will contribute significantly to the efficiency of its trawler operations.

The freezing machine is built in the form of a tunnel, about 40 feet long, 8 feet wide, and 4.5 feet high. Within the freezing tunnel, two synchronized bracket-joint chain belts are rotated by a variable gear, powered by an electric motor of 0.6 hp., which permits the adjustment of the belt speed from 27 to 216 minutes per complete revolution. The two belts carry a total of 260 compartments (each about 4 inch-

German Federal Republic (Contd.):

es wide, 7 inches deep, and 59 inches long) formed by removable aluminum plates mounted on the bracket joints of the belts. Viewed from the side, the compartments have the form of a square-cornered U.

The fish placed in these compartments freeze quickly to the walls of the aluminum plates. The rear cog wheels moving the belts are constructed to permit the compartments to retain their U-shape while changing direction. This prevents the frozen fish from dropping out. When the compartments return to the front of the tunnel, they run over round cog wheels which cause the walls of the compartments to spread and change their form from a U-shape to a W-shape, thus shaking out the frozen fish over the discharge chute.

The compartments can also be divided into two sections, each to be filled with about 10 pounds of herring emersed beforehand in an alginate solution to prevent the herring from becoming rancid and drying out. The blocs of frozen herring thus obtained are again treated with the alginate solution before storage, as a supplementary precaution.

The compartments can also be removed completely and a plastic band installed to permit the individual freezing of filleted herring, which reportedly will then be vacuum-packed in transparent plastic bags. The fillets will drop from the plastic band at the end of the tunnel. They are pushed by plates mounted on the belts along the smooth bottom of the tunnel to the discharge chute at the tunnel's front.

The freezer tunnel is equipped with four steel laminar evaporators with an evaporating surface of 295 square

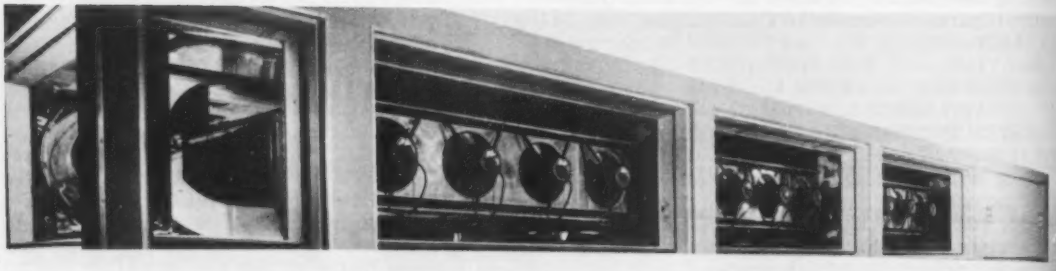

Fig. 1 - Over-all view of freezer tunnel for the continuous freezing of fish aboard factory trawlers.

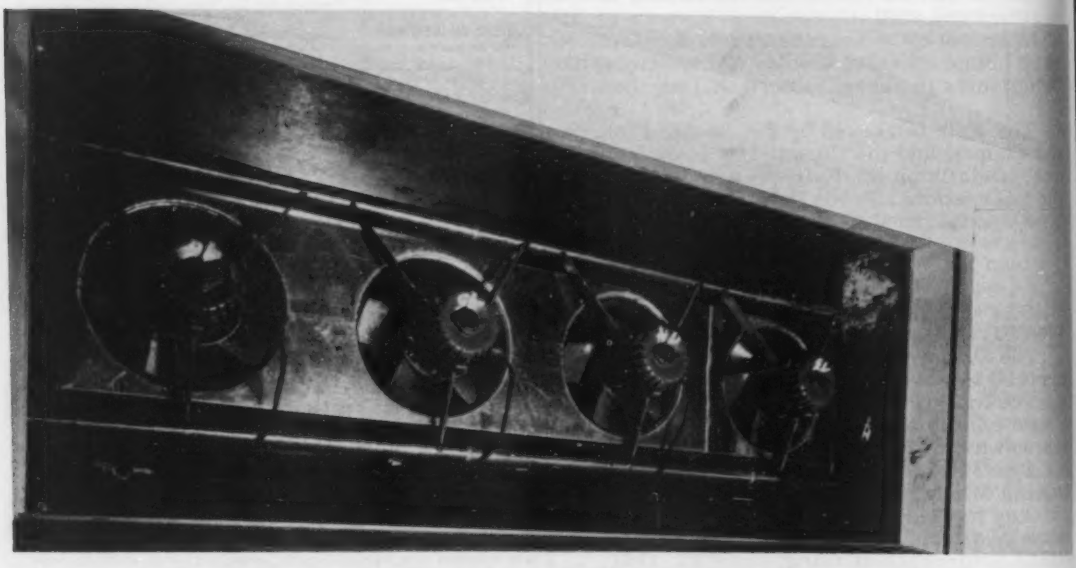

Fig. 2 - Close-up of one section of freezer tunnel.

German Federal Republic (Contd.):

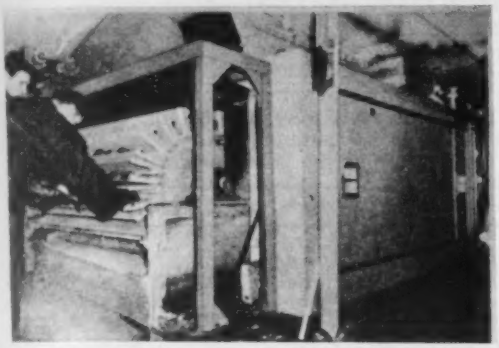

Fig. 3 - Inserting fish in removable aluminum plate compartments.

meters each, capable of reducing the air temperature in the tunnel to -30° C. (-22° F.). Four electric fans with a capacity of 7,100 cubic meters (250,737 cubic feet) per hour (required power 1.6 kw.) installed in front of the evaporators circulate the cold air around the belts carrying the fish. The maximum freezing capacity of the new equipment is stated to be 0.85 metric ton (about 1,874 pounds) of fish per hour, based on reducing the temperature in the core of the fish to -10° C. (14.3° F.).

Fig. 4 - Viewed from the side, the compartments have the form of a square-cornered V.

The West German company attaches much importance to the fact that the new equipment can be adapted to the freezing of herring fillets because it will permit the use of factory trawlers in the herring fishery. Previously, the trade held the conviction that factory trawlers could be operated profitably only in the white fish fishery in distant waters. Employing the new method of freezing filleted herring, however, factoryships will reportedly be able to land about 500 metric tons of high-quality herring fillets. The factoryship trawler has the added advantage of being able to process herring so fast through two filleting machines (at the rate of about 1.2 tons of round herring per hour) that it must be supplied part of the fish caught by other fishing boats.

The German company states that the cost of the new machine is about DM 330,000 (US$82,500), and that its installation aboard a trawler should amount to approximately 8 percent of the construction cost. The firm has applied for a patent on the freezer. (United States Consulate General, Bremen, April 12, 1961.)

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DEVELOPMENTS IN FROZEN FOODS MARKETING:

At the annual meeting of the German Frozen Food Institute held April 18-19, 1961, in Wiesbaden, the growing importance of food preservation through freezing was discussed. The individual working committees of the Institute discussed some of the pending problems, and prepared drafts on: (a) directives on the handling of frozen food at all trade levels; (b) directives on temperature control in frozen food storage installations; (c) foundation of a voluntary quality control committee which will supply information and advice to the frozen food trade as well as to consumers (committee will receive financial support from the German Federal Food and Agriculture Ministry); (d) extension of advertising and public relation work; and (e) establishment of quality grades and standards for frozen food products.

From experiences in the German frozen food market during recent years, future market and consumption trends predicted by the market research experts of the Frozen Food Institute were:

1. The increase in frozen food sales is no longer in conformity with the growth in the number of frozen food cabinets in stores. That means sales are now growing faster than the number of cabinets available. This development resulted from increased advertising, growing popularity, and improved and enlarged displays of frozen food products in the shops. The distribution of frozen food cabinets in store is presently undergoing a change.

German Federal Republic (Contd.):

The early development stage, when more and more retail stores newly installed one smaller or larger display and sales cabinet, is now being followed by the second stage where the shops with already existing installations are increasing their frozen food storage and display space by setting up second and third cabinets. The increased space will be primarily used for the necessarily larger supply of poultry.

2. A new development is also in sight with regard to the shipping and distribution of frozen food within Germany. A number of potent enterprises have now specialized in the general transport of frozen food and special fast plant-to-store deliveries.

3. Fish consumption is expected to increase further. With the growing capacity of vessels with deep-freeze installations aboard, more domestic first-quality, sea-fresh fish products will become available in areas far away from the coast. In addition to the growing German production, it is expected that frozen fish imports from the Scandinavian countries will increase considerably.

West Germany consumed 5,100 metric tons (5,622 short tons) of frozen fishery products valued at DM10 million (US$239,800) in 1960 as compared with 3,000 metric tons (3.307 short tons) valued at DM6 million (US$143,900) in 1959.

4. Market developments for precooked, ready-to-serve products are hard to predict. These food items are fairly new in the German market, particularly in frozen form. However, an increased number of firms has recently taken up the production of frozen "heat'n eat" products. (U. S. Foreign Agricultural Service Report, Bonn, May 4, 1961.)

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FISH MEAL PRICES, MAY 7, 1961:

Prices reported at Hamburg Commodity Exchange as of May 7, 1961, for fish meal delivered ex-Hamburg warehouse, or c.&f. West German sea port were as follows:

Type of Fish Meal	Protein Content (%)	Delivery	DM/Metric Ton	US$/Short Ton
German fish meal	50-55	prompt/June 1961	500	113.40
" " "	55-60	" " "	520	117.94
" " "	60-65	" " "	540	122.47
" " " Std. brands	60-65	May "	597.5	135.51
Icelandic cod meal	65-70	" "	615	139.48
Peruvian fish meal	65-70	" "	530	120.20
" " "	65-70	June-July "	540	122.47
" " "	65-70	Aug.-Dec. "	550	124.74
Danish herring meal	72-75	May "	610	138.35
" " "	72-75	June-Sept. "	602.5	136.65
Angola fish meal	65-70	May "	547.5	124.17

Note: Values converted at rate of 4.0 deutsche marks equal US$1.

As compared with April 7, 1961, fish-meal prices on the Hamburg exchange on May 7, 1961, were up sharply for domestic and Peruvian fish meal.

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SUPPLY, DISTRIBUTION, AND PRICES OF FISH MEAL, 1959-1960:

Despite a 12-percent decrease in West Germany's total fish meal production in 1960 as compared with 1959, the supply and distribution increased. This was due to a 21-percent increase in imports (see table 1).

Foreign Trade: Imports of Peruvian fish meal increased to 133,000 metric tons in 1960--about one-half more than in 1959. This amount represented more than two-thirds of total fish meal imported in 1960. Total fish meal imports increased from 156,000 tons in 1959 to 197,000 tons in 1960.

From 1959 to 1960 total fish-meal exports remained small and were mostly to the Soviet Zone of Germany.

Consumption: Consumption of fish meal in Germany increased by 14 percent in 1959, 17 percent in 1960, and is expected to increase additionally in 1961. Favorable prices have induced German hog and chicken producers to use fish meal in feed rations.

German Federal Republic (Contd.):

Table 1 - West Germany's 1/ Supply and Distribution of Fish Meal, 1959-1960

Year	Supply					Distribution		
	Beginning Year Stocks	Total Production	Production 2/	Imports	Total Supply	Exports 5/	Consumption	End Year Stocks
	(1,000 Metric Tons)							
1960:	6	82	78	197	285	7	277	1
Cod meal		3/13						
Fish meal		3/52						
Herring meal		3/13						
Other meal		4/ 4						
1959:	2	93	89	156	251	8	237	6
Cod meal		3/15						
Fish meal		3/53						
Herring meal		3/21						
Other meal		4/ 4						

1/Includes West Berlin; Saarland since July 1959.
2/Production in plants with more than 10 employees.
3/Requirements:

	Minimum Percent		Maximum Percent	
	Protein	Ca Phosphate	Fat	Salt
Cod meal	60	18	3	3
Fish meal	55	15	8	5
Herring meal	55	8	12	8

4/Including production from shrimp.
5/Including exports to Soviet Zone: Approximately 4,000 metric tons in 1960; approximately 7,000 metric tons in 1959.

Prices: With the exception of the latter half of 1958, Peruvian fish meal undersold German fish meal at Hamburg from mid-1957 through early 1961 (see fig. 1). Prices for both German and Peruvian meal fell sharply after May 1959, recovering briefly in late 1960, only to decline again early in 1961.

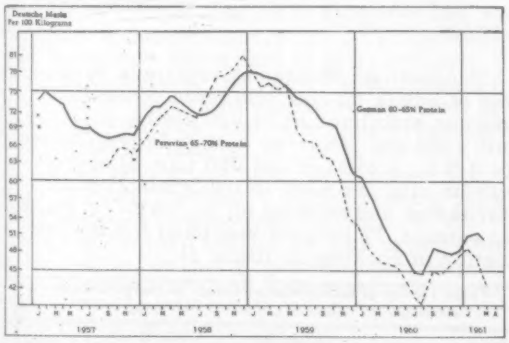

Fig. 1 - Prices of West German and Peruvian Fish Meal at Hamburg, Germany, 1957-March 1961.

Raw material available for fish meal production decreased by 14 percent from 1959 to 1960. Whole fish, herring waste, and other fish waste are used to produce German fish meal (see table 2).

Table 2 - West Germany's 1/ Use of Whole Fish and Waste in Production 2/ of Fish Meal and Fish Oil, 1959-1960

Item	1960	1959
	(Metric Tons)	
Whole fish	106,770	145,323
Herring waste	68,375	72,354
Other waste	170,045	176,178
Total	345,190	393,855

1/Includes West Berlin.
2/Production by plants with more than 10 employees.

Note: Also see Commercial Fisheries Review, August 1960 p. 49.

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FOREIGN TRADE, PRODUCTION, AND SUPPLY OF MARINE OILS, 1959-1960:

Foreign Trade: Imports of edible marine oils increased from 121,900 tons in 1959 to 127,700 tons in 1960. During that period, total imports of industrial marine oils decreased from 23,100 to 17,000 tons. But total imports of both edible and inedible oils remained constant at about 145,000 tons. The amount of all marine oils imported from the United States declined from 22,900 tons in 1959 to 16,300 tons in 1960 (see table 1). This total has steadily decreased since 1956, when it

Table 1 - West Germany's 1/ Imports of Edible and Industrial Marine Oils 2/, 1959-1960

Year & Product	Edible	Industrial	Total	Imported from U. S. 2/		
				Quantity		Value
	(1,000 Metric Tons)			1,000 Metric Tons	Percentage of Total	US$1 Million
1960:						
Whale	69.8	9.8	79.6			
Other	57.9	7.2	65.1			
Total	127.7	17.0	144.7	3/16.3	11.3	2.6
1959:						
Whale	67.8	12.2	80.0			
Other	54.1	10.9	65.0			
Total	121.9	23.1	145.0	3/22.9	15.8	4.0

1/Includes Saarland since July 1959, and West Berlin.
2/Excludes fish-liver oils.
3/Mostly edible menhaden oil.

German Federal Republic (Contd.):

amounted to 39,000 tons. Germany's imports of marine oils from Peru have increased from 8,833 tons in 1959 to 19,200 tons in 1960. Due to the small catch of winter herring (the smallest in years), imports from Norway fell off in 1960. However, Norway was the greatest single source of liver oils in 1960, supplying 678 tons out of a total 1,510 tons. A total of 79,610 tons of whale oil and fat valued at US$16 million was imported by Germany in 1960; Japan, The Netherlands, and Norway supplied 76 percent of the imports.

Table 2 - West Germany's 1/ Imports and Exports of Specified Marine Oils and Fats, 1960

	Quantity	Value	
	Metric Tons	Deutsche Marks 1,000	US$ 1,000
LIVER OILS:			
Imports:			
Norway	678	685	164
Other	832	746	179
Total	1,510	1,431	343
Exports:			
Denmark	646	559	134
Switzerland	409	379	91
Other	1,015	967	232
Total	2,070	1,905	457
WHALE OIL AND WHALE FAT:			
Imports:			
United States	298	233	56
United Kingdom	341	346	83
Iceland	733	634	152
The Netherlands	14,515	11,788	2,826
Norway	13,951	11,718	2,809
Portugal	1,096	815	195
Soviet Union	7,489	6,260	1,501
Union of South Africa	1,150	821	197
Guayana, British	694	554	133
Peru	1,225	885	212
Japan	31,961	27,012	6,476
Australia	5,172	4,462	1,070
New Zealand	772	671	161
Other	213	378	91
Total	79,610	66,577	15,962
Exports	171	218	52
OTHER MARINE FATS AND OILS:			
Imports:			
United States	16,021	10,874	2,607
Denmark	2,921	1,873	449
United Kingdom	1,039	649	156
Iceland	1,355	889	213
The Netherlands	3,253	1,691	405
Norway	5,869	4,472	1,072
Portugal	2,578	1,505	361
Angola	5,332	3,244	778
Union of South Africa	1,334	924	222
Canada	2,232	1,629	391
Chile	1,606	995	239
Peru	19,200	12,154	2,913
Other	2,358	1,340	321
Total	65,098	42,239	10,127
Exports:			
Denmark	790	534	128
The Netherlands	2,795	1,742	418
Norway	12,126	7,856	1,883
Sweden	5,544	3,719	892
Other	429	359	86
Total	21,684	14,210	3,407

1/Includes West Berlin. Excludes Soviet Zone of Germany.
Note: Values converted at rate of 4.171 DM equal US$1.

Germany also imported 216 tons of spermaceti valued at DM 211,000 (US$50,587) and exported 23 tons valued at DM 70,000 (USR16,783). An additional 65,000 tons of other marine fats and oils were imported with a value of US$10 million (see table 2).

Germany's total exports of marine oils declined somewhat, from 27,400 tons in 1959 to 24,900 tons in 1960. During that period, exports of edible oils decreased from 26,000 to 20,900 tons, but exports of industrial oils increased from 1,400 to 4,000 tons (see table 3).

Table 3 - West Germany's 1/ Exports of Marine Oils, 1959-1960

Year & Product	Edible	Industrial	Total
	(1,000 Metric Tons)		
1960:			
Whale	-	3.2	2/ 3.2
Fish	20.9	0.8	21.7
Total	20.9	4.0	24.9
1959:			
Whale	-	0.1	0.1
Fish	26.0	1.3	27.3
Total	26.0	1.4	27.4

1/Includes West Berlin.
2/This disagrees with amount shown in table 2.

In 1960, exports of liver oils from Germany amounted to 2,070 tons, valued at US$457,000; Denmark and Switzerland were the main buyers. Germany's exports of whale oil were small in 1960, amounting to only 171 metric tons. A total of 21,684 tons of other marine fats and oils were exported, valued at US$3 million.

Production: Western Germany's production of edible marine oils from domestic sources stabilized at 14,000 metric tons for both 1959 and 1960--no change is anticipated for 1961. A total of 106,000 tons of edible marine oils was used in the production of margarine and cooking oil in 1960. Of the total amount, 77 percent was used for the production of cooking oil (table 4).

Table 4 - Use of Edible Marine Oils 1/ in Margarine and Cooking Oil Production, Western Germany 2/, 1960

Item	Margarine Production	Cooking Oil Production	Total
	(1,000 Metric Tons)		
Whale oil	8	53	61
Fish oil	16	29	45
Total	24	82	106

1/Refined oil equivalent.
2/Includes West Berlin.

Production of inedible marine oils amounted to only 1,000 tons in 1959 and 1960--no change is expected in 1961. Domestic production of total inedible marine fats and oils has remained small, accounting for only 6 percent of the total supply of those oils in 1960.

German Federal Republic (Contd.):

Total West German output of edible and inedible fish and marine oils declined from 24,325 tons in 1959 to 21,192 tons in 1960.

Supply and Distribution (Inedible Oils): Western Germany's total supply and distribution of industrial or inedible marine oils, used mostly (80 percent) for finishing leather, declined generally in 1960 as compared with 1959. Stocks were unchanged, while imports and domestic consumption dropped off. But exports increased (see table 5). (United States Embassy, Bonn, April 14, 1961.)

Note: See Commercial Fisheries Review, February 1961 p. 48.

Table 5 - West Germany's 1/ Supply and Distribution of Industrial or Inedible Marine Oils Only, 1959-1960

Year	Beginning Year Stocks	Production	Imports	Total Supply	Distribution		
					Exports	Consumption	End Year Stocks
	(1,000 Metric Tons)						
1960	1.0	1.0	17.0	19.0	4.0	14.0	1.0
1959	1.0	1.0	23.1	25.1	1.4	22.7	1.0

1/ Includes Saarland since July 1959, and West Berlin.

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TWELVE LARGE STERN-TYPE TRAWLERS NOW FISHING:

Twelve large modern West German stern-type trawlers are now fishing, according to the April 21, 1961, issue of Dansk Fiskeritidende, a Danish fishery trade periodical. Six have their home port in Bremerhaven, four in Cuxhaven, and two in Kiel. The stern trawler in increasing degree will prevail in the West German vessel-building program. Stern trawler number 12, the factoryship Munchen (960 gross tons), is equipped with two filleting lines and a quick-freezing plant. The vessel's bow is constructed so as to keep the forward portion as high as possible over the waves in high seas in order to protect both the crew and equipment. Of the 11 newly ordered trawlers, 9 will operate from Bremerhaven and 2 from Kiel.

Greece

FISHERY LANDINGS, IMPORTS, AND CONSUMPTION, 1960:

Fishery landings in Greece in 1961 amounted to 90,000 metric tons. Of this amount, 8,000 tons was frozen fish landed by trawlers, 7,000 tons was canned or salted, and the balance of 75,000 tons was consumed as unprocessed fresh fish.

Imports of fishery products in 1960 totaled 30,000 tons and included 8,000 tons of frozen fish, 12,000 tons of salt cod, 6,000 tons of herring, and 4,000 tons of canned fish.

Apparent per capita consumption of fishery products in 1960 amounted to 14 kilos or about 31 pounds. (Alieia, April 1961.)

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SPONGE LANDINGS, 1960/61 SEASON:

During the 1960/61 sponge fishing season that ended in Greek waters on March 31, 1961, a total of 162,700 pounds were landed. The landings included 131,174 pounds from Cyrenacian waters, 25,353 pounds from Greek waters up to November 30, 1960, and 6,173 pounds from Greek waters during the December-March 1961 winter sponge fishing season. (Alieia, a Greek fishery periodical, April 1961.)

Greenland

NEW SHRIMP FISHING GROUND FOUND:

In the waters off Narssaq in South Greenland a new large shrimp fishing ground has been found. Greenland fishermen are enjoying record shrimp fishing, according to Dansk Fiskeritidende (March 24, 1961, issue). The cutters are landing up to 2,000 pounds of large deep-water shrimp daily, and an announcement over the Greenland radio directed all the shrimp cutters in North Greenland to Narssaq. Similarly, it has been necessary to hire additional shoreworkers in the shrimp plants to process the increased production. (Fiskets Gang, April 13, 1961.)

Iceland

ATTITUDE REGARDING THE COMMON MARKET AND EUROPEAN FREE TRADE ASSOCIATION:

Two interviews with Iceland's Minister of Commerce published by the newspaper Althydubladid in February 1961 show that Iceland has not reached any final conclusion as

Iceland (Contd.):

to whether she will join the European Common Market or the European Free Trade Association (EFTA). The Minister of Commerce pointed out that the very existence of these trading groups poses an increasingly serious problem to Iceland which depends very much on trade for its livelihood. He declared that Iceland's trading position would inevitably deteriorate if it continued to remain outside either group.

As the Minister explained in the interviews, many matters relating to trade in fish have not yet been definitely decided upon within either the Common Market or the EFTA. He believes Iceland should exert what influence it can within one of these organizations to obtain the freest possible trade arrangements for seafood products.

Although the growth of international trade has been far faster within the Common Market area and the population is greater than in the EFTA, the Minister pointed out that the practical possibilities for joining would be easier in the case of the EFTA than the Common Market.

He cited the fact that Icelandic Manufacturing industries are now run in large measure under the protection of high tariffs. Within the EFTA there was established a precedent for the protection of industry in small nations when Portugal received protectionary concessions upon joining the EFTA. No such precedent exists within the Common Market, however. Likewise in the case of Finland there was a precedent established for a country with a large Soviet Bloc trade in its association with the EFTA, despite its trade with the Eastern Bloc. Such an exception would likewise be necessary in the case of Iceland.

Once a member, the existence of majority rule within the Common Market and voting in proportion to size would mean that Iceland would have practically no influence within that organization. He said this was why countries such as Denmark and Norway did not want to join the Common Market. A more flexible organization like the EFTA, therefore, would appeal more to Iceland.

The Minister, in reply to a question, pointed out that in March 1957, representatives of 6 European states signed the Rome Treaty on the establishment of a Common Market. Parties to this treaty were France, Germany, Italy, Belgium, Holland, and Luxembourg. According to this treaty, all import duties and restrictions on trade among the member states are to be abolished in 12 to 15 years and a common import duty is to be set up in regard to other states. The objective of this Common Market or federation is, however, not only to create a big market, but also to promote political cooperation among the member states, it being provided that the leadership of the federation shall be able to make decisions, by a simple majority, which will be binding on individual member states.

To the question: What will be the effect of this Common Market on the foreign trade of Icelanders? The Minister stated that: "It is difficult to realize this fully as yet, because those rules which have been adopted bear first of all upon trade in manufactured goods. Agricultural produce and fish products are considered to be specially placed in many ways. It is anticipated that before the 12- or 15-year period is over, the Six-powers will have agreed upon a common policy in their agricultural and fishing matters." He pointed out that it is not yet known what that will be, but until this occurs one cannot say for sure what effect the Common Market will have on those countries which supply it with agricultural produce and fish products. The Common Market's common duty on fishery products has already been determined, and in general, is considered to be very high. Iceland's exports to the Six-power area are, chiefly cured saltfish and stockfish to Italy, iced fish to Germany, and frozen fish to France. The common duty will cause a considerable increase in the import duty to Germany, Belgium, and Holland, but a decrease in the duty to France. The import duty on saltfish and stockfish to Italy will increase. The main thing in connection with this change in duties is that Iceland's position to compete with producers in the Common Market area will deteriorate greatly, as they will be able to sell duty free within the area. Iceland and the countries outside the Common Market will have to bear a high duty. This is especially applicable to markets for frozen fish in those countries as the demand is expected to increase with expansion of frozen foods distribution. This will also be of considerable importance with respect to Iceland's saltfish exports to Italy.

With regards to the EFTA, the Minister stated that shortly after representatives of

Iceland (Contd.):

the six countries signed the treaty of Rome, discussions began within the OEEC, at the initiative of Britain, to the effect that all member states of the OEEC ought to set up a so-called European Free Market. But the main difference between a Free Market and a Common Market like the one the Six-powers established is that in a Free Market the member states only abolish duties and restrictions in their mutual trade, but do not set up a common duty in regard to other countries; on the contrary, the duties remain unaltered in regard to countries outside the Free Market. These Free Market discussions within the economic cooperation organization broke up at the end of 1958; France and Britain could not agree. France did not want to weaken the strong position it had acquired within the Common Market and Britain did not want to sacrifice its autonomy in commercial matters in the measure that France considered necessary, doubtless not at least in view of its ties to the Commonwealth. As soon as discussions within the OEEC ceased, discussions began among seven European states on the establishment of a free market among themselves; i.e., Britain, Sweden, Denmark, Norway, Switzerland, Austria, and Portugal. The delegates of those states signed a treaty on the establishment of a Free Trade Association in November 1959. The establishment of the European Free Trade Association is no doubt to be considered as a counter move to the establishment of the Common Market, and possibly the objective was to force the Six-powers to resume talks and to make some kind of agreement. But the European Free Trade Association is much smaller than the Common Market. The inhabitants of the Seven-powers are 110 millions, but the inhabitants of the Six-powers are 168 millions. On the other hand, the national income and foreign trade per capita of the Seven-powers are much greater than that of the Six-powers.

In reply to the question: What effect does the establishment of the European Free Trade Association have on the foreign trade of Icelanders? The Minister replied, "the duties of the Free Market countries on fishery products are not very high, but they are lower than those of the Common Market countries. The problems of agriculture and fishing within the European Free Trade Association are the same as those within the Common Market. They are considered as being of a special character, and decisions have not yet been made regarding arrangements to be adopted for the trade with fishery products other than meal, oil, canned fish, and frozen fillets, but the duties and restrictions on trade in those products will be abolished the same as for industrial goods. A decision on trade in other fishery products is still uncertain. This decision will largely depend on what differences there will be in the relation of producers within and without the European Free Market to trade in the area. Although the Free Market provisions are considered to apply to trade in frozen fish, it was pointed out that Great Britain did not commit itself to permitting imports of more than 24,000 tons a year at the lower duty, and reserved the right not to let the decrease in duty apply to frozen fillets if a basic change should take place in the position to compete, for example, owing to increased fishery jurisdiction."

The Icelandic Minister of Commerce stated that it could be said that the establishment of the European Free Trade Association has an unfavorable influence on Iceland's export trade, especially its exports to Great Britain of frozen fish, and iced fish, if they were resumed, and on its exports of saltfish to Portugal. He said it was difficult to make an exact statement until it is known what rules will apply to trade in all fishery products within the European Free Market. It is obvious, however, that the position of those who stand outside will always be worse than that of those who are within such combinations as the European Free Trade Association and the Common Market.

The Minister pointed out that originally it was expected that in the beginning of 1970 the Six would, in general, have abolished duties and restrictions on their internal trade and have established common duties externally. When the European Free Trade Association was established in September 1959, it set itself a corresponding goal as far as the abolition of duties and restrictions is concerned. But after the establishment of the European Free Trade Association, the Six decided to accelerate the abolition of duties and restrictions. On July 1, 1960, the European Free Trade Association countries decreased duties on manufactured goods by 20 percent and then adopted special rules to ensure that finished goods shall not get into the European Free Trade Association from countries outside the area, where duties are the lowest. At the same time, the internal import quota was increased by 20 percent. Then gradually duties are to

Iceland (Contd.):

be lowered and restrictions abolished according to certain rules so that the trade in the European Free Trade Association area will become entirely free by the beginning of 1970. The decision on accelerating decreases in duties and abolition of restrictions on the same lines as had been decided in the Common Market, meant the member states of the European Free Trade Association have surely intended to facilitate agreement between the trade federations, but the decision to hasten the decrease in duties and the abolition of the restrictions within the Common Market has no doubt increased the tension. Last January 1, the Six effected an internal duty reduction of 10 percent which, according to the original agreement, was not to be effected until January 1, 1962. At the same time the first alteration in duties was made, looking towards the eventual common outside tariff. At a meeting in Switzerland last October, ministers from the European Free Trade Association countries discussed the possibilities of hastening the implementation of the decrease in duties and the abolition of restrictions, in harmony with the plans of the Common Market. Britain and Sweden were probably of the opinion that this was necessary, but Denmark and Norway were against it. The ministers will meet again in February 1962 and it is not unlikely that they may determine to hasten the next 10 percent decrease in duties and to let it take place July 1, 1962.

The reason for these measures of the Six is, no doubt, not only that they wanted to fortify their position in relation to the Seven, but also that they wanted to accelerate the political unification of the countries, which is of no less importance in the cooperation of the Six than in commercial cooperation. Another primary reason is that a great investment has taken place in the Common Market area and the sooner the Common Market becomes a reality, the sooner this great investment will start to yield profits.

The Minister stated that neither market has as yet made any final decision on those items which are of the greatest concern to the commercial interests of Iceland; i.e., what rules shall apply to trade in fishery products. It is to the best interests of Iceland that trade in fishery products be as free as possible and that its products be sold where buyers need not pay higher duty on them than on the same kind of fishery products already on the market. The Common Market is bigger, but Iceland exports to the Free Trade Association have been greater. The mutual duty of the Common Market will be higher than the present duties of the Free Trade Association countries. Iceland's trading position could be improved more by joining the Common Market than the European Free Trade Association, but on the other hand, one should not regard these matters from the viewpoint of trading interests alone. The character of the Common Market is entirely different from that of the European Free Trade Association, as there is in the Common Market not only the question of a business cooperation, but also cooperation in many other fields as well.

The reorganized OEEC, now known as Organization for Economic Cooperation and Development, in Paris, to which the United States and Canada have now become parties, will no doubt become a center for discussing the problems which arises from the formation of the trade federations. When the new organization was founded last December, a decision was made to set up a special committee within the organization to deal with fishing; this will greatly facilitate promotion of Icelandic interests in this field within the new organization. As regards our facilities to influence other nations to lower their duties on fish products, I would mention, the Minister said, that Icelanders are not members of the international duty alliance, GATT. At the same time as we look into the possibilities of our joining the trade federations of Western Europe, we must also consider the possible advantage of becoming parties to international decreases in import duties on fishery products. (United States Embassy, Reykjavik, March 24, 1961.)

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FISHERY LANDINGS IN 1960 LOWER:

Icelandic fishery landings in 1960 for all species were about 10 percent less than in 1959 despite a considerable increase in 1960 in the number of new fishing vessels and heavy investment in gear and equipment. Total landings amounted to 513,744 metric tons in 1960, compared with 565,618 metric tons in 1959. The cod catch however, increased slightly over 1959, and the 1960 haddock landings were nearly double those in 1959. Ocean perch landings in 1960 were down to only about one-half the 1959 landings. The 1960 summer herring season failed, and yielded 50,000 tons less than in 1959.

Iceland (Contd.):

The over-all decline in 1960 over 1959 in the value of the fish catch was about 13 percent. However, the actual value of fish exports was somewhat higher because of the large carry-over of fish stocks from 1959 into 1960. Fish exports for 1960 were valued at 2,326 million kronur (US$61.2 million), compared with 2,256 million kronur (US$59.4 million) for 1959. The purchase of 5 new trawlers and 53 smaller fishing vessels during 1960, the relatively poor fishing season, and the decline in world prices of fish meal and oil were particularly difficult for the country's balance of payments position.

The impact of investment in new vessels as against lack of adequate return on investment was particularly felt in the trawler industry which experienced its worst year since the postwar rebuilding of the trawler industry in 1949. The difficulties of the trawler industry stemmed, in part, from its adjustment to abolition of the subsidy and compensations system scrapped in February 1960, and partially to the poor ocean perch catch which in 1959 contributed more than 60 percent of the total trawler landings. As a result, the trend in landings by the motorboat fleet as a substitute for trawler landings was further marked during 1960.

Groundfish Landings by Type of Vessel, January-December 1960

	1960	1959	1958
	(Percentage of Total)		
Motorboats	69.8	59.1	50.4
Trawlers	30.2	40.9	49.6
Total	100.0	100.0	100.0

The voluntary ban which Icelandic vessel owners imposed on landings of iced fish in the United Kingdom ports, until the fishery limits question with Great Britain was settled, was another difficulty affecting the trawler fleet. The voluntary ban continued during the fourth quarter of 1960. However, a number of Icelandic trawlers were able to obtain reasonably good prices for fresh fish landed in German ports. The decline in the availability of quality herring for salting, along with the drop in ocean perch landings contributed directly in 1960 to a heavy decline in exports to the Soviet Bloc countries, as compared with 1959.

The increase in the cod, haddock, and flatfish landings, however, boosted the value of exports to countries other than the Soviet Bloc compared with 1959. Partly offsetting this trend was the decline in prices of fish oil and meal. However, by September 1960, all carry-over stocks of those commodities had been contracted for. Production of quick-frozen fillets dropped considerably when compared with previous years. In 1960, Iceland's frozen fillet production totaled 53,000 metric tons; 1959, 95,000 tons; and 1958, 97,000 tons. In 1960, Iceland exported 64,436 tons of frozen fish worth about 896 million Icelandic kronur (US$23.6 million), compared with 70,000 tons, worth 964.5 million kronur (US$25.4 million) in 1959. (United States Embassy, Reykjavik, May 3, 1961.)

Note: See Commercial Fisheries Review, April 1961 p. 59.

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FISHERY LANDINGS FOR JANUARY-MAY 1961 DROP:

Iceland's fishery landings during the main fishing season (January-May 1961) will be down about 30 percent from those in the same period of 1960, the Director of the Icelandic Fisheries Association, predicted late in April. He also predicted that the value of the January-May 1961 landings would drop about 350-400 million (US$9.2-10.5 million) as compared with the same period of 1960.

The area affected most by the decline was the Westman Islands, an important production and processing center, because of a general strike earlier this year that brought fish production and processing to a standstill.

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TRAWLERS LAND CATCHES IN ENGLAND DESPITE LABOR TROUBLE:

Trawler officers at both Hull and Grimsby, England, have been refusing to leave for the fishing grounds in protest against landings in England by Icelandic trawlers. The fishing vessel officers at Hull ended their tie-up on April 10, but those at Grimsby remained firm in their demand that Icelandic landings be prohibited. However, five Icelandic trawlers are reported to have landed trips at Grimsby without incident since the controversy started.

India

EXPERIMENTS WITH FISH MEAL BISCUITS:

Fish biscuits with 12.5 percent fish meal have been made in India for trial purposes with a specially prepared shrimp meal. The finished product is reported to be very tasty, soft in texture, and rich in protein. Careful-

India (Contd.):

ly prepared shrimp meal contains as high as 70 percent protein. This was mixed with flour, butter, sugar, baking powder, vanilla essence, eggs, lemon juice, milk, and salt, and beaten well. It was then rolled and cut into shape, using moulds, and baked at 175° to 190° C. (347°-374° F.) for 30 to 45 minutes. In one set of experiments, fried fish meal was used, and in another set, fresh fish meal was used. The product was similar in color, flavor, and consistency to the usual biscuits, and the fish flavor was not at all predominant. The taste of sugar, and the flavor of lemon and vanilla completely hid the fish odor, and organoleptically the fish biscuits were indistinguishable from the usual grain flour biscuits. The product was presented to the public at several exhibitions and consumer acceptance was reported to be good. Although the experiment was only in the laboratory stage, it was expected that there should be no difficulty in expanding operations on a commercial scale. While the experiments were done with shrimp meal, any fish meal carefully prepared will be satisfactory for making such biscuits. Sardine meal, mackerel meal, silverbelly meal, and other types fish meal, were later investigated, and the biscuits prepared from them were found to be very tasty. No complicated technique or apparatus is involved, and the fish meal used in this preparation is inexpensive and easily produced. It was reported that even small bakery owners can produced fish flour biscuits on a large scale, and the finished product will be only as costly as the ordinary brands of biscuits sold in Indian markets. (Fisheries Station Report and Year Book, Department of Fisheries, Madras, India, 1955-1956, printed in 1959).

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INDO-NORWEGIAN FISHERIES PROJECT TO BE EXTENDED:

Extension of the Indo-Norwegian fisheries project in the State of Kerala to other maritime states of India has been under discussion in New Delhi between a visiting five-member Norwegian delegation and the Indian Government.

The move to extend the project reflects its increasing success as a means of improving the living standards of the fishing village population of a small area in Kerala through a broad approach, including vessel construction and mechanization, development of improved fish handling and marketing methods, fisheries research, and health, sanitation and water supply projects. (United States Embassy, New Delhi, May 18, 1961.)

"Chinese lift nets" used by fishermen of India at Cochin Harbor. This is a traditional fishing method in India.

Japan

BERING SEA BOTTOMFISH FISHERY CONTROLS IMPOSED:

To control the bottomfish fishery (long-line, gill net, and trawl) in the Bering Sea, the Japanese Fishery Agency early this year announced the establishment of six fishing areas in the Bering Sea and the allocation of these areas to fishing fleets on the basis of historical record and fishing objectives. The Agency's announcement also covered restrictions on vessel sizes and catches.

Following the success of four Japanese long-line fleets operating off the Olyutorski coast in 1960, fishing companies began announcing intentions of engaging in that fishery. At one time a total of 37 fleets, with a total catch target of 660,000 metric tons of fish (66,000 metric tons of fish meal and 175,000 tons of frozen fish), indicated plans to engage in the Bering Sea bottomfish fishery. Thus, the Fishery Agency was compelled to impose controls to prevent confusion on the fishing grounds.

As of March 29, 1961, ten fleets had submitted official applications, and the consensus was that by mid-April when all formal applications were expected to be in, the number would total 27 or 28 fleets.

The Fishery Agency has classified the Bering Sea bottomfish fishing fleets into two general groups: (1) fish meal factoryships and flatfish freezer factoryships, and (2) mothership-type long-line and gill-net fleets. Fish meal factoryships (limited to four) and flatfish freezer factoryships with previous records of operation in the Bering Sea, with the exception of the Tenyo Maru, which is classified as a fish meal-oil fac-

Japan (Contd.):

toryship, have been assigned fishing grounds to the east of 175° W. longitude. Tenyo Maru is licensed to fish in a triangular area extending to as far west as 180° longitude. Freezer factoryships which have not engaged in the Bering Sea fishery in previous years are restricted to grounds lying between 170° E. and 170° W. longitude. Mothership-type long-line and gill-net fleets are restricted to the area lying between 170° E. and 180° longitude.

Vessels over 3,000 tons are classified as motherships and only catcher vessels over 50 tons gross are being permitted to engage in the fishery. Catch restrictions are placed on halibut, herring, and king crab but the taking of those species is not entirely prohibited. Salmon cannot be taken at all.

The king crab factoryship Tokei Maru, 5,386 gross tons, departed Hakodate on April 1 for Bristol Bay and was expected to arrive at the fishing grounds about April 10. Her target for 1961 is 80,000 cases of king crab. The three trawlers assigned to fish with this factoryship departed Hakodate on March 29. The fleet is expected to be on the fishing grounds for 100 days and is scheduled to return home in mid-July. (Shukan Hokkai Suisan, April 3, 1961.)

The king crab freezer factoryship Shinyo Maru, 5,630 gross tons, departed Hakodate on April 5 for Bristol Bay. Her catch target for 1961 is 1.5 million crabs and 3,000 tons of frozen fish. According to latest available information, Shinyo Maru's fleet consists of 13 trawlers and that in addition to king crab she expects to pack 1,500 tons of frozen herring. (Shukan Hokkai Suisan, April 10; Shin Suisan Shimbun Sokubo, April 5, 1961.)

The freezer factoryship Kaiko Maru, 2,940 gross tons, departed Hakodate on April 7 for the fishing grounds off the Olyutorski coast. Her fleet consists of seven catcher vessels equipped with trawl, gill-net, and long-line gear. This fleet was expected to arrive on the fishing grounds around April 20. (Shukan Hokkai Suisan, April 10, 1961.)

The stern trawler No. 50 Akebono Maru, 1,470 gross tons, is presently fishing in the Bering Sea. Akebono Maru reported that on March 20 she sighted a Russian trawl fleet of about 60 vessels in the 250-300 ton class and in the 600-ton class. The Russian fleet was sighted about thirty miles northwest of Unimak Island. (Suisan Keisai Shimbun, April 2, 1961.)

The Japanese research vessel No. 19 Taiyo Maru, 276 gross tons, departed Kushiro, Hokkaido, on March 28 to locate new bottom fishing grounds along the northern section of East Kamchatka. Chartered from a large Japanese fishing company, she will be at sea for about three months. (Suisan Keizai Shimbun, April 5, 1961.)

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TWENTY-SIX FLEETS TO ENGAGE IN BERING SEA BOTTOMFISH FISHERY:

A total of 26 Japanese fishing fleets have officially announced their intentions to engage in bottomfish operations in the Bering Sea in 1961. This includes 11 vessels which recently departed for the fishing grounds or are already engaged in fishing.

The total 1961 catch target for the 26 Japanese fleets to fish in Bering Sea bottomfish fishery (in metric tons): flatfishes 398,000, halibut 34,000, cod 19,000, Alaska pollock 40,000, gin dara or silver cod 11,000, rockfish 25,000, shrimp 9,000, herring 41,000, others 8,000; total 585,000 metric tons.

In addition to flatfishes, the Japanese fleets will fish for halibut, cod, rockfishes, and herring. The fleets of two firms are also planning to fish for shrimp, and one company's factorship, Einin Maru, is reported to be equipped with one shrimp canning line. Although three firms had

Fig. 1 - Japanese factory mothership operating in Bering Sea bottomfish fishery. Processes both fish and crabs.

Japan (Contd.):

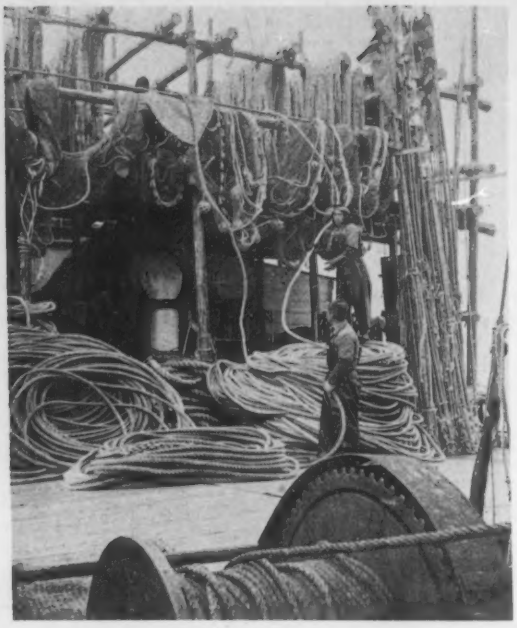

Fig. 2 - Stowage of nets and lines aboard the Japanese factory mothership Shinyo Maru.

investigated shrimp resources in northern waters for two years and were reported to be formulating plans early this year to fish commercially for shrimp, it appears now that only two are following through on their original plans.

The factoryship Einin Maru is being allowed by special permission to fish in the Bristol Bay area which the Fishery Agency had reserved for factoryships with previous records of operation in Bristol Bay. Einin Maru is permitted to fish in the area under a clause in the Fishery Agency's bottomfish fishing regulations which reads, "Freezer factoryships without previous records of operation in the Bering Sea shall be permitted to fish in Areas D and E under special conditions." Einin Maru's "special conditions" are assumed to be her intentions to fish for shrimp. (Suisan Keizai Shimbun, April 29 and March 31; Suisan Tsushin, April 24; Nippon Suisan Shimbun, April 10 and February 24, 1961.)

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FIRM HOPES TO FISH SOUTH OF ALEUTIAN ISLANDS:

A large Japanese fishery firm is reported to have obtained informal approval from the Japanese Fishery Agency to conduct experimental fishing operations for herring and bottom fish south of the Aleutian Islands. For the purpose, the firm plans to purchase a 2,000-ton vessel and convert it to a refrigerated vessel.

Two other major fishing companies have been planning to develop fishing grounds in waters south of the Aleutian Islands for some time. The Fishery Agency has not yet taken a firm stand on this matter, according to newspaper reports. (Suisan Tsushin, April 21, 1961.)

Editor's note: The above news item appears to conflict with earlier press releases. Nippon Suisan Shimbun, March 6, 1961, stated that the Japanese Fishery Agency does not intend to permit dragging in the area south of the Alaskan Peninsula. But the latest news article refers to the area south of Aleutian Islands, and states that the Fishery Agency

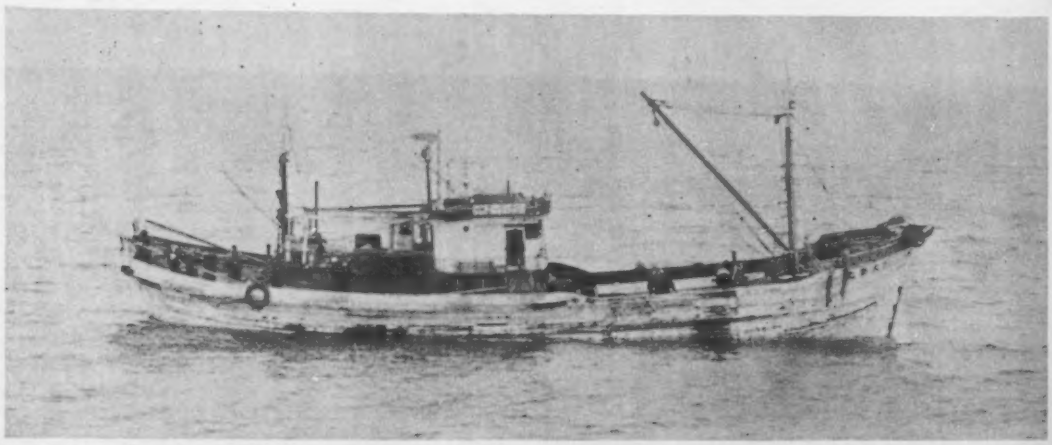

Fig. 3 - A Japanese trawler fishing bottomfish for the mothership Shinyo Maru in the Bering Sea.

Japan (Contd.):

has not taken a definite stand to prohibit fishing in that area.

The Japanese Fishery Agency often licenses vessels to operate on an experimental basis.

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BERING SEA BOTTOM FISHING FLEET'S CATCH TARGET FOR 1961:

According to Japanese newspaper reports, 28 mothership fleets with 375 catcher vessels will engage in the Bering Sea bottom fishery this season. The following catch targets by fishing area for 24 of the mothership fleets were published in Suisan Keizai Shimbun, May 11, 1961.

Catch Targets of 24 Japanese Bering Sea Bottom Fishing Fleets by Fishing Areas 1/, 1961

Species	Fishing Areas 1/						
	AB	ABC	ABCD 2/	BCD	DE	F 3/	Total
	(Metric Tons)						
Flatfish	-	100	-	-	355,914	42,640	398,654
Halibut	8,240	8,885	5,568	13,198	-	2,000	37,891
Cod	3,700	6,993	3,133	5,488	2,940	-	22,254
Alaska pollock	-	100	-	200	31,266	1,230	32,796
Gindara 4/	1,807	4,888	1,134	4,482	550	1,120	13,981
Rockfish	877	2,319	2,362	3,698	9,653	6,760	25,669
Shrimp	-	-	180	1,770	8,000	-	9,950
Herring	7,530	10,135	5,141	18,239	1,900	-	42,945
Misc.	50	220	2,350	1,898	3,897	-	8,415
Total	22,204	33,640	19,868	48,973	414,120	53,750	592,555

1/Key to fishing areas:
Area A: Between 170° E. and 175° E. longitude.
Area B: Between 175° E. and 180° longitude.
Area C: Between 180° and 175° W. longitude.
Area D: Between 175° W. and 170° W. longitude.
Area E: Area east of 170° W. longitude.
Area F: Triangular area formed by line extending from Cape Navarin to Aleutian Islands along 180°, east along Aleutian chain to Cape Sarichef, Unimak Island, and back to Cape Navarin.
2/Catch targets listed under this area represent target of one mothership fleet (Shikishima Maru, 9,700 gross tons) only.
3/Catch targets listed under this area represent target of one mothership fleet (Tenyo Maru, 11,581 gross tons) only.
4/Literally translated means silver cod.

BRISTOL BAY MOTHERSHIP FISHERY TRENDS, MAY 1961:

The two Japanese fish meal factoryships operating in Bristol Bay, Renshin Maru (14,094 gross tons) and Kinyo Maru (9,373 gross tons), as of May 18, 1961, produced a combined total of 4,128 metric tons of fish meal, 1,048 tons of fish solubles, 10,224 gallons of fish oil, and 780 tons of frozen fish. Shinyo Maru (5,630 gross tons) which was licensed to fish on an experimental basis as a king crab freezer vessel (catch target--180 tons of king crab) is reported to have caught 473 tons of flatfish, 9.5 tons of cod, 183 tons of herring, and 50 tons of king crabs. (Suisan Keizai Shimbun, May 11 and 18, 1961.)

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EXPORTS OF CANNED PET FOOD WITH FISH DROP IN 1960:

Japan's exports of canned pet food (with fish as an ingredient) in 1960 were less than half the 1959 exports, the Japanese Canned Food Exporters' Association reports. Only 273,837 cases were shipped in 1960. Of this total, the United States received 272,487 cases, Canada 100 cases, Switzerland 250 cases, and Hong Kong 1,000 cases.

The lower exports were due to unusually poor skipjack tuna and mackerel-pike fishing. Pet food packing is a byproduct operation, and the scarcity of fish adversely affected this industry. Also, Japanese packers were faced with quality claim problems from buyers during the year which caused them to lose interest. Also, the drop in the 1960 canned pet food exports was in part attributed to the more extensive sale of canned tuna flakes on the Japanese home market during the year.

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Japan (Contd.):

CANNED FISHERY PRODUCTS EXPORTS, FISCAL YEAR 1960:

The Japan Canned Food Exporters Association reported for fiscal year 1960 (April 1, 1960 to March 31, 1961) that total exports of canned agricultural, dairy, and fishery products decreased somewhat from the previous year and amounted to 13,199,419 cases.

Fishery products made up 67 percent of total canned products exports and amounted to 8,746,314 cases. Compared to 1959 exports of fishery products, which totaled 9,828,024 cases, 1960 exports showed a decline of over a million cases. This decline is primarily the result of smaller packs of canned salmon and canned crab meat. (Nippon Suisan Shimbun, May 5, 1961.)

Japanese Exports of Canned Fishery Products, Fiscal Year 1960

Product	Actual Cases
Canned tuna:	
In oil	1/ 1,401,294
In brine	2,035,192
Others	104,822
Canned tuna total	3,541,308
Canned saury:	
In tomato sauce	339,631
Natural	472,367
Others	227,764
Canned saury total	1,039,762
Canned sardine:	
In tomato sauce	701,517
Natural	2,492
Others	14,636
Canned sardine total	718,645
Canned jack mackerel	472,378
Canned Pacific mackerel	188,168
Canned salmon	1,671,897
Canned crab:	
King crab	279,323
Kegani	163,256
Others	46,516
Canned crab total	489,095
Canned oysters:	
Smoked	190,019
Natural	156,192
Broiled	170
Canned oyster total	346,381
Other fishery products	278,680
Grand total	8,746,314

1/Export Canned Tuna Producers Association reported exports of canned tuna in oil in fiscal year 1960 as 1,083,916 cases.

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CANNED SARDINE SALES IN 1960:

Canned sardines received by the Japanese sales company during fiscal year 1960 (April 1960-March 1961) and their sales are reported (Suisan Tsushin, April 22, 1961) as follows:

Type	Carryover from 1959	Receipts	Sold
	(Cases)		
Oval No. 1 can, 48/cs.	7,836	179,848	183,020
" No. 3 " 96/cs.	12,558	164,932	162,160
Small No. 1, 100/cs.	3,727	97,155	100,308
No. 4 can, 48/cs.	1,334	5,391	6,480
Square No. 8 can, 96/cs.	-	5,415	5,388
Special No. 7, 96/cs.	1,500	47	4,607
Anchovy	47	3,181	948
Others	190	227	650
Total	27,192	456,196	463,561

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DELEGATION TO STUDY TONGA ISLANDS AS POSSIBLE OVERSEAS FISHING BASE:

Earlier this year it was reported that Shizuoka Prefecture was sending a delegation of four members to study likely sites for establishing overseas fishing bases in the South Pacific and Indian Ocean areas. Another delegation is making plans to go on a similar mission to the South Pacific. This delegation is to be composed of two Diet members from the Democratic-Liberal Party (one from Hokkaido; the other from Fukushima Prefecture) and one former Diet member from the Socialist Party. The group will leave Japan in June and spend one and one-half months studying facilities, potential resources, and fishing conditions in the Tonga Islands.

Tonga, a British possession, is situated south of Samoa and southeast of the Fiji Islands. Waters in that area are reported to abound with yellowfin, big-eyed tuna, sardines, octopus, shrimp, sperm whales, etc. Island natives are reported to be unfamiliar with fishing techniques. Awareness of Tonga as a possible overseas fishing base came about following the commencement of Japanese fishing operations in the nearby Fiji Islands.

The Socialist Party member in the delegation is reported to be interested in establishing an overseas base in Tonga as a means of revitalizing the sagging distant-water fishing fleet of Kagoshima Prefecture. (Suisan Keizai Shimbun, April 16, 1961.)

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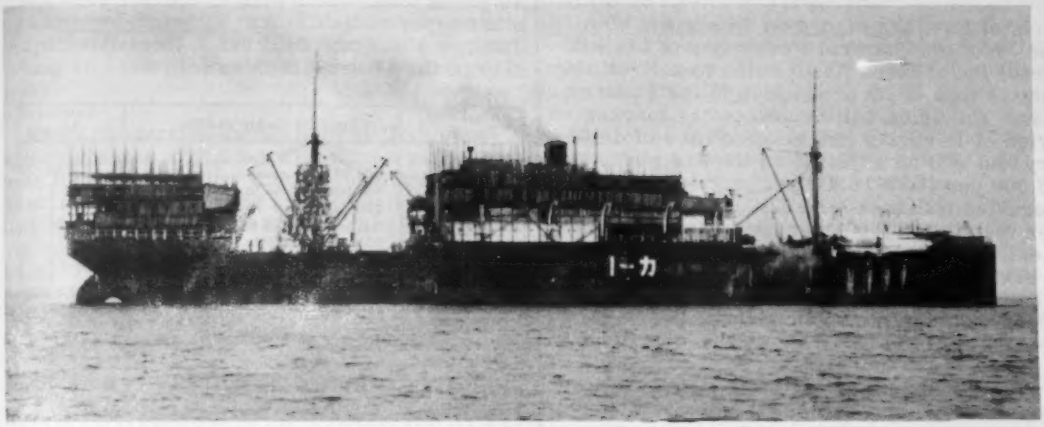
EARLY SEASON KING CRAB CATCH IN BRISTOL BAY:

The Japanese king crab mothership Tokei Maru's catch for the ten-day period April 12-22, was reported to be 104,570 crabs (5,951 cases). Tokei Maru encountered bad weath-

Japan (Contd.):



Japanese king crab mothership Tokei Maru.

er until April 17 but the weather improved after that date and fishing was reported to have picked up considerable. Tokei Maru was operating in the vicinity of 56° N. latitude, 163° W. longitude. (Suisan Keizai Shimbun, April 26, 1961.)

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MONTHLY FISH MEAL PRICES, 1960 AND JANUARY-MARCH 1961:

Average monthly wholesale prices for various types of domestic fish meal in Japan for 1960 and January-March 1961 are found in table. (United States Embassy, Tokyo, May 23, 1961.)

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FISH MEAL FACTORYSHIP COMPANY AGREES TO DELIVER 14,000 TONS OF MEAL:

The Japanese fishery firm which hopes to produce about 26,000 metric tons of fish meal with its two fish-meal factoryships, Renshin Maru and Kinyo Maru, presently operating in

Japanese Domestic Fish Meal Wholesale Prices, 1960 and January-March 1961

Year and Month	Protein 65%					Protein 45%
	Saury	Atka Mackerel	Launce	Jack Mackerel, Sardine, and Mackerel	Factoryship Flatfish	Cod and Pollock Waste
	(US$ Per Metric Ton)					
1960						
January	153.33	152.78	-	-	-	109.44
February	143.33	143.06	-	-	-	108.89
March	135.83	133.33	-	-	-	94.17
April	129.72	123.61	-	-	-	81.11
May	131.39	123.61	132.50	126.39	-	81.11
June	-	-	132.50	126.39	-	88.06
July	-	-	132.50	120.56	-	87.78
August	119.17	-	-	-	-	89.44
September	121.94	111.11	-	-	-	91.11
October	139.17	129.17	-	-	147.22	96.39
November	157.50	145.28	-	-	147.22	116.67
December	158.06	151.11	-	-	154.72	116.67
1961						
January	161.67	-	-	-	156.94	125.00
February	165.00	-	-	-	-	123.61
March	168.06	165.28	165.83	-	-	123.61

Source: Japan Aquatic Oil Association.

Japan (Contd.):

Bristol Bay, has signed an agreement with the Japanese National Federation of (Animal Feed) Purchasers Association to sell 14,000 metric tons of its production to the Federation. The price will depend on the market price of Peruvian fish meal at time of delivery and will be adjusted on the basis of 43,000 yen (US$119.44) per metric ton for Peruvian fish meal and 52,000 yen (US$144.44) per metric ton for Japanese factoryship fish meal. Should Peruvian fish-meal prices increase, as they have already, then Japanese factoryship fish-meal prices will be raised accordingly on the basis of these two base prices.

The 43,000 yen is the price paid in late 1960 for Peruvian fish meal delivered to Japan. Peruvian fish-meal imports now run about 57,000 yen ($158.33) per metric ton, delivery Japan. (Suisan Tsushin, May 1, 1961.)

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FISH SOLUBLES IMPORTS CLASSIFIED UNDER ANIMAL FEEDS:

The Japanese Ministry of International Trade and Industry (MITI) announced on April 28, 1961, that henceforth fish solubles will be placed under the category of animal feed. This means that those who wish to import fish solubles must now submit applications for import licenses to the joint panel composed of the Fishery Agency and Bureau of Animal Husbandry which acts on all requests to import items covered under animal feed, such as fish meal, instead of submitting them to MITI.

The Ministry has been flooded with a number of requests for licenses to import fish solubles and has instituted this new procedure for license application to eliminate further confusion in handling such requests. (Nippon Suisan Shimbun, May 3, 1961.)

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FISHERY AGENCY APPROVES CONSTRUCTION OF 496 FISHING VESSELS:

For January 1 to April 24, 1961, the Japanese Fishery Agency has approved the construction of 496 fishing vessels, most of which are vessels under 40 gross tons.

Tuna long-line vessels approved for construction total 87. This figure does not include a number of vessels, almost all under 40 gross tons, which plan to fish for tuna and other types of fish. (Shin Suisan Shimbun, January 1 to April 24, 1961.) Breakdown by size of the 87 vessels is as follows:

General Size Range	Specific Range or Size	Number of Vessels
Gross Tons		
Under 40	All 39 gross tons	38
41 to 100	All between 65 to 99 gross tons	9
101 to 200	179 gross tons	1
201 to 300	All between 239 to 289 gross tons	24
301 to 400	All between 309 to 389 gross tons	11
401 to 500	408, 434 & 480 gross tons	3
Over 1,000	1,495 gross tons	1

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FISHERY COOPERATIVE TO SHIP FISHERY PRODUCTS WITHIN JAPAN BY VESSEL RATHER THAN RAIL:

The Japanese National Federation of Fishery Cooperatives and a Japanese fishing firm have exchanged memorandums concerning the transportation of items such as frozen fish and fish meal within Japan. According to the memorandums, the fishing firm agrees to use its vessels to transport frozen fish and fish meal to different points in Japan from October to December at rates comparable to or lower than existing rail freight rates. October to December are slack months for the fishing firm and it plans to use its two freezer vessels, Seifu Maru, 8,693 gross tons, and Shichifuku Maru (size unknown) as carriers. These two vessels will be engaged in the Bering Sea bottom fishery during the summer of 1961.

The National Federation of Fishery Cooperatives benefits from this arrangement since its member cooperatives will be able to ship commodities, mainly saury products, at rates equivalent to or lower than existing rail freight charges. The Japanese Government recently raised rail freight rates and this association hopes to check the rise in saury meal prices by resorting to this new shipping arrangement. (Suisan Keizai Shimbun, April 28, 1961)

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NEW FISH SAUSAGE PLANT COMPLETED:

The completion of a new fish sausage-ham plant in Nagoya in Central Japan was the subject in the Japanese periodical Suisan Keizai Shimbun of April 23 of two full pages. The firm operating the plant is affiliated with the largest Japanese fishery firm, and the new sausage plant is reported to be the largest of

Japan (Contd.):

its kind in Central Japan. The plant is equipped with up-to-date machinery capable of producing an equivalent of 100,000 fish sausages a day.

Daily productive capacity of all fish sausage companies affiliated with the large Japanese fishery firm now totals 1,590,000 pieces of sausages. Compared to this, daily productive capacity of the second largest fishing company's sausage plants is said to total 700,000 pieces of fish sausages a day.

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SOVIETS SAY JAPANESE SHOULD REDUCE NORTH PACIFIC SALMON CATCHES:

The chief Soviet negotiator at the fifth meeting of the Japanese-Soviet Commission for Northwest Pacific Fisheries on April 29, 1961, said that there was "no reason why the Soviet Union alone must be concerned with the preservation of salmon resources" in the face of Japan's "excessive" fishing.

The statement was made at a special interview with Kyodo News Service held at the Soviet Embassy in Tokyo. He indicated that he gave the interview in view of the continued impasse in the fishery talks, which opened in early February in Tokyo.

The Soviet side has increased its planned salmon haul for this year by 10,000 metric tons to 80,000 tons and demanded that the Japanese side reduce its catch correspondingly, although 1961 is a cyclically rich year for salmon migration, he said.

The Japanese, through "excessive" fishing outside the restricted zone off Kamchatka, are yearly increasing their over-all hauls, he claimed.

The 10,000-ton increase in the Soviet haul should be covered by an equivalent cut in the Japanese haul, he insisted.

The Soviet negotiator had earlier proposed a 50,000-ton ceiling for the Japanese North Pacific salmon catch this year in the area covered by the Convention, or 17,500 tons less than in 1960. The Soviet negotiator said he was opposed to a "political compromise" through channels outside the fishery talks.

Meanwhile, the chief Japanese delegate to the fishery talks charged that the Soviet negotiator was considering only the interests of his own country.

The Soviet negotiator has "deliberately distorted" the conclusion of the scientific and technical subcommittee to the effect that the salmon migration this year is better than last year but not as good as in 1959, the Japanese delegate said. In addition, he said the Japanese side has at least agreed to discuss the problem of restriction of Japanese fishing outside the present controlled areas, as the Soviets proposed, "in view of the importance of the free area for conservation of the salmon resources."

But the Japanese have not yet agreed to expansion of the restricted zone, the Japanese delegate insisted. The Soviet negotiator has twisted this Japanese stand too, he added. (The Japan Times, April 30, 1961.)

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THIRD LARGEST FISHING FIRM BUILDS SALMON MOTHERSHIP AND OTHER VESSELS:

The third largest Japanese fishing firm in Japan has constructed its first postwar salmon mothership (Meisei Maru, 8,335 gross tons). The vessel has an over-all length of 502 feet, a beam of 65 feet, and is equipped with three canning lines, two of them high-speed lines capable of packing 240 cans a minute.

The same company also has under construction one 1,500-ton trawler to be used in the Bering Sea bottomfish fishery and scheduled for completion in July 1961; one freezer factoryship of 5,500 gross tons (scheduled for completion in November 1961) for use in winter whaling and the summer Bering Sea bottomfish fishery; and 2 freezer-carriers of 1,500 gross tons each to serve as carriers for salmon and bottomfish fishing fleets and scheduled for completion in June and August 1961.

Other fishing vessels owned and operated by the same company include 17 tuna fishing vessels (total of 9,144 gross tons), 3 salmon motherships (total 24,400 gross tons), 2 king crab motherships (10,900 tons), a freezer vessel (1,400 tons), 9 trawlers (4,242 tons), and 4 miscellaneous vessels (396 tons). (Suisan Keizai Shimbun, April 29, 1961.)

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AGREEMENT CONCLUDED FOR EXPORT OF FROZEN TUNA TO CZECHOSLOVAKIA:

A subsidiary of a large Japanese trading firm together with an exporting firm recently concluded an agreement with Czechoslovakia to export 1,050 metric tons of tuna to that country. Plans call for exporting the amount between late June and September via Hamburg, West Germany. Price is $285 a ton delivered at Hamburg.

Czechoslovakia is represented by the Czechoslovakian Government's trading corporation handling agricultural and marine products. In view of this, Japan hopes to have an arrangement, such as that already in effect with Yugoslavia, whereby all exports to Czechoslovakia would be funneled through one Japanese firm.

Czechoslovakia, by concluding the trade agreement, now ranks as the third largest importer of frozen tuna in Europe.

Annual consumption of tuna in Czechoslovakia is not known but the fact that Czechoslovakia is importing over 1,000 tons at one time shows that a great latent demand exists in that country. However, the Czechoslovakian trading firm is expected to withhold concluding further trade agreements until the first shipment of tuna is brought in the country and the products carefully inspected.

Trade between Japan and Czechoslovakia is on a barter basis. Japan has imported more products from Czechoslovakia than she exported to that country so no difficulties are foreseen in exporting Japanese products to Czechoslovakia at

Japan (Contd.):

the present time. However, in view of the fact that Czechoslovakia has few commodities to export, she will probably not be able to rapidly increase her imports under the present system. Czechoslovakia is reported to have imported small amounts of tuna from Norway and Yugoslavia in the past, most of which were canned and a small portion smoked. (Suisan Tsushin, April 19, 1961.)

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FROZEN TUNA PRICE TRENDS:

The market for Japanese exports of frozen tuna to the United States has firmed considerably, with albacore selling for $300 a short ton and yellowfin selling for $250 a ton and up f.o.b. Japan.

In a March 31 issue of Nippon Suisan, a Japanese periodical, the following prices f.o.b. Japan for frozen tuna for export to the United States were shown: Line-type products: yellowfin $260 a short ton, albacore $280 a ton; high-seas-type products: yellowfin $230 a ton, albacore $270 a ton. This same issue listed the price of tuna for export to Yugoslavia as $280 a metric ton for yellowfin and $290 per ton for albacore, both c.i.f. prices.

Small amounts of summer albacore were being landed in April at Shimizu and Yaizu by the Japanese domestic tuna fleet. Due to scarcity of fish, albacore was reported selling for around $350 a metric ton ex-vessel price and are all being canned. Frozen tuna buyers are unable to compete at present high prices, which are expected to prevail for some time, and buyers are not expected to compete for fish until mid-May when the albacore season reaches its peak. (Suisan Shimbun Sokuho, April 13; Nippon Suisan Shimbun, April 7 & March 31, 1961.)

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FROZEN YELLOWFIN TUNA EXPORTS TO SPAIN APPROVED:

The Japanese Fishery Agency recently approved the application of a large Japanese fishery firm to export about 500 metric tons of frozen yellowfin tuna to Spain by June through an Italian firm. The Italian firm will sell the tuna to Spanish canners.

Exports of frozen tuna to Spain have not been licensed in the past since Spanish canned tuna in brine competed directly with Japanese products sold on the United States market. However, the Spanish Government has given its assurances that canned tuna produced from Japanese-caught tuna will not be exported to the United States, and it is with this understanding that the Japanese Fishery Agency has authorized exports to Spain. (Suisan Tsushin, May 1, 1961.)

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EXPORTS OF CANNED TUNA IN OIL FOR FISCAL YEARS, 1958-60:

Data from the Japanese Export Canned Tuna Producers Association shows that exports of canned tuna in oil for 1960 (April 1, 1960 to March 31, 1961) amounted to 1,083,816 cases. This represents a reduction of 393,300 cases for the same period in 1959 when exports totaled 1,477,116 cases. Exports in 1958 totaled 803,814 cases. (Suisan Tsushin, April 24, 1961.)

Japanese Exports of Canned Tuna in Oil by Principal Destination, Fiscal Years 1958-1960

Destination	1960	1959	1958
	(Cases)		
Germany	438,906	484,808	220,224
Canada	151,754	160,385	137,365
Lebanon	70,260	114,744	40,941
Switzerland	63,573	36,918	28,783
Netherlands	62,999	85,863	59,258
Belgium	53,197	92,360	63,743
England	18,489	105,135	41,291
Italy	15,337	26,584	71,668

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CANNED WHITEMEAT TUNA PACKERS FACE PROBLEMS IN 1961:

A gloomy picture of the Japanese canned albacore tuna industry, as it faces the 1961 canning season, is presented in an article which appeared in the Japanese fisheries newspaper Suisan Keizai Shimbun (Fisheries Economic News), dated April 14, 1961. Canners face two major problems in 1961, according to this article. They are: (1) high ex-vessel prices and (2) labor shortages.

The high cost of fish is due to a shortage of fish, a condition which has prevailed for three years. It does not appear that canners will get any relief from this problem until the summer albacore season is well under way, for according to recent information, small amounts of albacore are now being landed in the principal Japanese tuna ports but these fish are selling at premium prices of 140 yen a kilogram (US$353 a short ton). The price which canners can pay for raw ma-

Japan (Contd.):

terial and yet realize a profit is in the range of 110 yen a kilogram (US$277 a short ton). If so, this then means that albacore canners are presently operating in the red.

The labor shortage which has developed is due to the wave of general economic prosperity which is reported to be sweeping Japan. In the fishing industry, this wave of prosperity has been reflected in the upsurge of new vessel construction, new plant construction, and plant expansion programs over the past six months. Japanese firms are reported to be offering various kinds of inducements to attract new employees, and tuna canners are hard put to compete with offers made by other industries.

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FISHERY AGENCY ANNOUNCES NEW REGULATIONS FOR TUNA MOTHERSHIP FISHERY:

On April 18, 1961, the Japanese Fishery Agency announced new separate regulations for tuna motherships employing regular catcher vessels and tuna motherships fishing with portable catcher vessels. Significant features of the new regulations are the establishment of two categories of tuna motherships; increase in catch quota to 22,900 tons for the "regular" tuna motherships; and elimination of restrictions on the carrying of portable vessels.

Regular Tuna Motherships: This term applies to motherships over 3,000 gross tons employing regular catcher vessels. Under the new regulations, vessels which have engaged in mothership-type tuna fishing for the past two years fall under this category. They include four fleets of three of the largest fishery firms in Japan.

In the past, mothership fleets have been allowed to augment their total catch quota of 13,600 metric tons with an additional 9,300 metric tons by agreeing to lay up tuna fishing vessels for specified lengths of time. These two catch figures, 13,600 and 9,300 tons, have now been combined into one over-all quota of 22,900 tons, which will be distributed to each of the four fleets on the basis of past records. However, the old system of augmenting the established quota by agreeing to lay up fishing vessels for specified lengths of time is still in effect. The primary difference is that more teeth have been put in this clause. Tuna mothership fleets, if they wish to augment their regular quota, must make definite arrangements to actually take out fishing vessels from the tuna fishery. Length of time that a particular fishing vessel would be laid up would depend on its size, and the equivalent amount of tuna which that vessel theoretically could catch but did not because of being laid up would represent the amount by which that tuna mothership fleet could increase her established quota.

Fishing areas are the same as before. Fleets are restricted to the following areas: North of the equator--area east of 170° W. longitude; equator to 25° S. latitude--area east of 170° E. longitude; and south of 25° S. latitude--area east of 160° E. longitude. However, in the authorized fishing area lying to the west of 170° W. longitude, which would be the area below the equator, only two fleets will be allowed to operate at any one time.

As before, medium-class tuna vessels (over 40 gross tons but less than 100 gross tons) and distant-water fishing vessels less than 200 gross tons are permitted to engage in this fishery. However, motherships fishing in the area to the east of 170° W. longitude can employ catcher vessels up to 240 gross tons. Use of portable fishing vessels is not permitted for motherships in this category.

Motherships are required to report their daily noon position and daily total landings (catch by species, pieces, and pounds for the fleet), as well as numbers of vessels which landed fish during the day, to the Japanese Fishery Agency Director without delay. Catcher vessels must submit daily reports to the Fishery Agency inspector on board the mothership showing their noon position, effort (amount of gear set), and catch (by species, pieces, and pounds).

Portable-Vessel-Carrying Tuna Motherships: Motherships in this category are limited to authorized distant-water tuna fishing vessels which will be allowed to carry two or more portable fishing vessels of not more than 20 tons each. For each portable vessel one distant-water fishing vessel must be withdrawn from the fishery and for every two portable vessels 50 tons of distant-water fishing vessel rights must be put up as replacement. The unused tonnage of distant-water fishing vessels withdrawn from the fishery for replacement purposes can be used to enlarge medium and distant-water fishing vessels. It is believed that this unused tonnage available for replacement purposes will help accelerate the conversion of medium-class tuna fishing vessels to larger distant-water fishing vessels. Even if motherships in this category carry only one portable fishing vessel, they must still retire one distant-water fishing vessel and put up 50 tons as replacement.

Under the old regulations, distant-water fishing vessels were allowed to carry only one portable fishing vessel. Such vessels as may have operated with portable fishing vessels in the past are covered under special provisions whereby they are required to retire one distant-water fishing vessel from the fishery and put up 25 tons of this vessel for a second portable vessel. The unused tonnage would be disposed of in the manner stated earlier. According to the Fishery Agency, about 15 vessels are affected under this ruling. Tuna motherships in this category will be permitted to fish in the Atlantic Ocean, Indian Ocean, and Eastern Pacific (east of 130° W. longitude). Catch cannot be transported by vessels other than the mothership itself, and applications to engage as portable-vessel-carrying tuna motherships must be submitted by May 15. Use of portable fishing vessels is expected to greatly increase the efficiency of distant-water fishing vessels, as was clearly shown by No. 21 Kuroshio Maru, which was specially licensed to fish on an experimental basis for tuna with six portable fishing vessels. Special regulations will likely be drafted for Kuroshio Maru since the new regulations do not fit that vessel.

Nippon Suisan Shimbun, April 24, states in its editorial that it is very possible that the elimination of restrictions on portable vessels might well herald a day in the future, possibly two years hence, when tuna motherships will be carrying as many as 17 or 18 portable fishing vessels. It is interesting to note that on April 6 even before the new regulations were announced, one of the large Japanese fishery firms was proceeding with plans to construct a 3,800-ton portable-vessel-carrying tuna mothership and eight portable fishing vessels in the ten-ton class. Construction was to have begun on April 1; target date of completion is September 15. (Nippon Suisan Shimbun, April 24; Suisan Keizai Shimbun, April 19-21; and Suisan Tsushin, April 6, 1961.)

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TUNA LANDING AT YAIZU, JANUARY-APRIL 1961:

April tuna landings at Yaizu, a major Japanese tuna port, amounted to 13,417 short

Japan (Contd.):

tons valued ex-vessel at over 1,226,850,000 yen (US$3,407,917). Landings for January to April 1961 totaled 43,193 tons valued at over 3,840,520,000 yen ($10,668,111). This represents a decline in landings of 3,524 short tons from the same four-months period in 1960, but an increase in value of over 679,560,000 yen ($1,887,667).

Tuna Landings and Ex-Vessel Values at Yaizu, April 1961

Species	Landings	Values		Avg. Price/ Short Ton
	Short Tons	¥1,000	US$	US$
Bluefin	265	90,077	250,214	942
Indian bluefin	4,529	357,853	994,936	219
Big-eyed	1,037	91,437	253,992	245
Yellowfin	1,346	135,171	375,475	279
Albacore	1,339	137,403	381,675	285
Skipjack	2,122	214,749	596,525	281
Pacific mackerel	1,489	75,352	209,311	141

Bluefin, yellowfin, and big-eyed tuna landings made up over half of the total landings for April, and amounted to over 7,000 tons. Albacore landings totaled slightly over 1,300 tons, about 300 tons more than in the same period a year ago. Skipjack and Pacific mackerel landings were down compared to April 1960 and continued to bring high prices. (Suisan Keizai Shimbun, May 7, 1961.)

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FIRST SUMMER ALBACORE LANDED:

The first landing of summer albacore was reported at the Japanese port of Shimizu on March 27. One-pole-vessel Kotohira Maru (120 tons) of the prefecture landed 3.5 metric tons of large albacore and 11 tons of large skipjack, which were caught around Nishinoshima, Bonin.

On about the same date, a landing of summer albacore was also reported at the port of Yaizu. Japanese differentiate between winter and summer albacore on the basis that the albacore live in greater depths during the winter and in the summer rise closer to the surface layer. (Japanese periodical dated April 10, 1961.)

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COASTAL SKIPJACK AND ALBACORE TUNA FISHING TRENDS, APRIL 1961:

Skipjack and albacore tuna fishing in areas near Japan started 10 days later than usual. Fishing began in mid-April. Fishing for skipjack was concentrated around 20 or 30 miles off the coast of the central part of Honshu, and the principal fishing ground for albacore was also in nearby waters. It was reported that 7-10 metric tons a day was the average catch of each vessel fishing.

The schools of skipjack appeared in the fishing area after April 15. Fish of 3-4½ pound size were being caught by hook-and-line boats. The biggest haul was more than 20 tons a day and the daily average 7-10 tons.

The number of vessels fishing for albacore was still small in April and some of them were reported to have caught some 40 tons a day. Good fishing was expected.

Off the coast of the Izu Peninsula where bait is sought by fishing vessels of Yaizu and Shimizu, poor sardine fishing was experienced this year, and the small sardine used for skipjack hook-and-line fishing could not be found. Some of the boats had to go to the southern part of Kyushu to get their bait.

Towards the end of April, 121 tons of skipjack were landed by 9 vessels and 43 tons of albacore by 2 boats at the Yaizu market, and ex-vessel prices were reported maintaining their high level. Processors and canners have been complaining about the shortage of raw tuna for processing. (Fisheries Economic News, April 26, 1961.)

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SKIPJACK TUNA FISHERY LANDINGS IMPROVED IN APRIL 1961:

Japanese skipjack tuna fishing, which had been erratic since the beginning of the fishing season, was reported to have picked up considerably in the latter weeks of April 1961. New schools of skipjack were located off Wakayama and Mie Prefectures in Central Japan in late April and about 30 vessels from Mie Prefecture were reported concentrated in that area. The vessels were reported catching from 4 to 7 tons per day, with a high of 20 tons a day, of fish averaging 2.2 pounds in the area 32°30' N. and 136°40' E. Most of the fish were landed in Yaizu, and the vessels averaged 20 to 30 tons per trip.

Fishing vessels from Shizuoka Prefecture, numbering over 20, were reported to be concentrated on the fishing grounds near the Ogasawara Islands (27° N., 142° E.). The vessels were also making excellent catches of 3- to 4½-pound fish, catching from 5 to 10 tons of skipjack per day.

Japan (Contd.):

Due to increased landings, the price of skipjack for the last ten days of April on the Tokyo Central Fish Market fell 20 to 30 percent from the previous ten days and sold for as low as 80 to 120 yen per kilogram (US$202-303 per short ton). During this same period, Pacific mackerel sold for 53 to 60 yen per kilogram ($133-$152 a short ton); jack mackerel for 50 to 60 yen per kilogram ($126-$152 a short ton); and sardines, due to their poor quality, for 40 to 53 yen per kilogram ($101-$133 a short ton). (Nippon Suisan Shimbun, May 3 & 5, 1961.)

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THREE NEW CANNED TUNA PRODUCTS TO BE MARKETED:

A Japanese firm is reported to have completed experiments on three new kinds of canned tuna products which are to be sold in competition with the canned "Tender Tuna" placed on the market during 1960.

The three new products packed in vegetable oil with additional ingredients are called: (1) "curry tuna" which contains curry powder as an ingredient, (2) "vegetable tuna" to which tomato soup and potatoes have been added, and (3) "sandwich tuna," a paste for sandwiches.

The new products were scheduled to appear on the market the latter part of April 1961. Packed in flat No. 2 or half-pound cans, they will sell at retail for ¥60 (16.7 U. S. cents) a can. Production of the new tuna products at this time is planned on a trial basis only. (Suisan Tsushin, April 19, 1961.)

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TUNA MOTHERSHIP FLEET SAILS FOR SOUTH PACIFIC:

The Japanese tuna mothership Tenyo Maru No. 3 (3,700 tons) and its catchers sailed from Tokyo for the South Pacific fishing ground as this year's first mothership-type tuna fishing fleet. The fleet consists of 45 catchers and 8 carriers and its catch target is 8,000 metric tons from which 7,150 tons of products are expected to be processed. Operations were to begin immediately after the fleet's arrival at the fishing ground around May 2, and at the end of August it will leave the sea area for a Japanese port, arriving there in mid-September. (Fisheries Economic News, April 24, 1961.)

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METHOD DEVELOPED FOR EXTENDING "SHELF-LIFE" OF TUNA SASHIMI:

A Japanese from Kesennuma, Miyagi Prefecture, is reported to have developed a method of preserving tuna sashimi (thinly-sliced raw tuna) for a period of over a week. Ordinarily sashimi does not last more than 2 or 3 days when the weather is mild but his product is said to retain its freshness for over a week. He has achieved this by slicing tuna into sashimi size and treating it with a desiccant (substance for drying food). Each slice is packaged separately and flavored lightly with soybean sauce. The product can be eaten directly as is and can be taken along on long trips or served at parties. The Japanese developer has had considerable success in food-drying techniques with saury, oyster, Pacific mackerel, etc., which he sells commercially. He hopes to improve the quality of his "instant sashimi" by conducting further experiments to improve its flavor. (Nippon Suisan Shimbun, May 5, 1961.)

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ANTARCTIC WHALING PRODUCTION FOR 1960/61 SEASON SETS NEW RECORD:

The seven Japanese Antarctic whaling fleets during the 1960/61 season set a new production record with 238,801 metric tons of whale oil and meat, exceeding that of the previous year by 37,000 tons. Fish whale oil production amounted to 101,225 tons; frozen whale meat, 121,211 tons; and other products, 16,365 tons. (Suisan Tsushin, April 6, 1961.)

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NORTH PACIFIC WHALING OPERATIONS BEGUN IN MAY:

Whaling operations in the North Pacific by the Japanese began about May 21, 1961, with the departure of two mothership fleets. Operations are to be centered in the vicinity of the Aleutian Islands and both north and south of the Alaskan Peninsula. There is a quota of 1,800 sperm whales for the sperm whale fleet and 800 blue-whale units for the baleen whale fleet. The two mothership fleets will be operated jointly by five Japanese fishing companies.

Japan (Contd.):

Typical Japanese whaling vessel operating in North Pacific.

The season will end for the sperm whale fleet with the return of the sperm whale mothership Kinjo Maru (11,000 tons) on August 13 and the blue whale mothership Kyokuyo Maru (11,500 tons) on August 26. (United States Embassy in Tokyo, May 19, 1961.)

Liberia

TUNA FISHERY TRENDS:

An agreement (announced in Taipei on March 30, 1961) between the Republic of China and Liberia provides for technical cooperation on agriculture, fisheries, and industry.

For fisheries, according to the agreement, China will send to Liberia a team of specialists to work out a plan for the two countries to establish a joint tuna long-line fishing industry. Liberia is interested in the employment of "skilled and proficient" Chinese crews to help develop trawling and purse-seine fisheries.

A Liberian periodical of March 20, 1961, reported that Japanese fishing interests under the firm name of "The Fishing Company of Liberia" completed an agreement with the Liberian Government to fish for tuna and construct a freezing plant at the Free Port of Monrovia.

Until the freezing plant is constructed, the firm will use a ship equipped with freezing facilities for storage of fish at the Free Port. Already six fishing vessels have arrived and according to company officials up to 20 additional vessels will be brought in consistent with the planned expansion of this enterprise (United States Embassy in Monrovia, May 3, 1961.)

Malaya

TUNA CANNING FACILITIES IN PENANG:

The Fisheries Department of the Federation of Malaya reports that there is only one fish cannery in the Federation of Malaya. Other facilities are very small village-type operations and include shrimp paste operations and fish salting.

The one cannery, located in Penang, is a joint Malayan-Japanese venture. The cannery was organized in 1959 with pioneer status from the Government and began operations in February 1960. It is reportedly considering the establishment of another cannery in the Federation of Malaya. Its present output is limited to tuna products. The main canning line is 5,000 cases of tuna in soybean oil, 10 percent of which is flakes and 30 percent chunks. It also produces about 400 pieces of tuna sausages per day. The company has

Malaya (Contd.):

leased the facilities of two other canneries in Penang. Those two canneries are under contract to process the tuna output of the Malayan-Japanese firm at least until the new canning facilities are erected. The two leased factories, however, are believed to be engaged in the canning of their own products, chiefly fruits, in part of their facilities and on their own account.

All of the pack of the Malayan-Japanese firm is sold for export to European countries. The management reports that it has not been successful in developing a market for tuna products in the Federation of Malaya. (U. S. Embassy, Kuala Lumpur, April 24, 1961.)

Morocco

FISHERY TRENDS, FIRST QUARTER 1961:

The first quarter of the year is not a particularly active time for the Moroccan fishing industry. During this period in 1961, a law defining maritime terms and regions was published, and various groups met to discuss Moroccan fishery problems. Efforts to increase fishery products exports appeared to meet with some success as indicated by the higher 1960 exports.

Morocco's 1960 marine fish catch amounted to 161,680 metric tons[1/] valued at 61 million dirhams (US$12.1 million). The catch increased 10 percent over the previous year, but was less than the 1958 production. The leading species was sardines, of which 119,250 metric tons were landed, compared with the 1959 catch of 103,880 tons. Safi was the leading port with sardine landings of 77,290 tons. The species which followed in importance on the basis of value were mackerel and tuna. Landings in Agadir dropped 40 percent due to the earthquake that destroyed most of the city in February 1960.

As in the past, about 70 percent of the commercial fish catch was canned. Most of the remainder was processed into byproducts, except for small amounts frozen for export. Only about 9 percent of the total catch was consumed on the local market.

Exports of fishery products in 1960 showed general improvement as compared with previous years, but were lower for fish meal and tuna. (See table.)

A law published in February 1961 modified the basic maritime and fishery regulations by setting up nine coastal districts, and by defining types of navigation according to ports called and distances traveled. These modifications have little significance except that it is anticipated that they will form the basis for later regulations.

Two groups interested in the fishing industry met during the first quarter of 1961. A Casablanca committee of fishing boat operators met with Government officials in February to discuss topics of current interest. The percentage of foreigners in the crews was to be kept at an absolute minimum; and it was asked that fishing vessels aiding boats in distress be paid more to compensate for the catch lost. It was recognized that the outfitter had the right to choose the captain of the vessel. A meeting of all groups in the country concerned with fisheries met at the end of March. Among the problems discussed were the price of fuel, and the modification of the contracts between the boat owners and the factories.

Efforts to expand exports, particularly of canned fish, are continuing through trade agreements and publicity. Canned fish have figured in the bilateral trade agreements concluded during the quarter, including one made with Cuba. In addition, a publicity campaign to help sell sardines in the United States is being con-

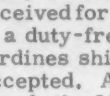
Moroccan Fishery Products Exports, 1958-1960

	QUANTITY			VALUE					
	1960	1959	1958	1960		1959		1958	
	(Metric Tons)			1,000 Dirhams	US$ 1,000	1,000 Dirhams	US$ 1,000	1,000 Dirhams	US$ 1,000
Fresh fish	14,437	14,755	11,952	14,956	2,956	14,542	2,874	11,377	2,248
Fish meal	14,587	17,143	21,795	6,231	1,231	14,587	2,883	11,065	2,187
Fish oil	5,047	4,074	3,818	2,931	579	5,047	997	2,784	550
Canned fish:									
Sardines	34,070	29,907	26,653	93,668	18,515	71,704	14,171	62,401	12,332
Tuna	2,867	3,215	3,175	10,126	2,001	9,950	1,966	10,218	2,019
Others	5,408	3,665	2,042	8,436	1,667	4,094	809	2,230	441
Totals	76,416	72,759	69,435	136,348	26,949	119,924	23,700	100,075	19,777

1/Revised.

Morocco (Contd.):

ducted, although shipments fell off from 50,675 cases in 1959 to 46,196 cases during 1960. With the high price received for Moroccan sardines in France under a duty-free quota system, lower prices on sardines shipped to the United States can be accepted. Also, when foreign currency is earned, the Moroccan Government grants licenses for the import of United States goods which generally bring higher profits. (United States Embassy in Rabat, April 27, 1961.)



Norway

COD FISHERY TRENDS, JANUARY-APRIL 1961:

Norway's landings of mature and young cod this year through April 22 totaled 97,212 metric tons as compared with 87,839 tons in 1960. Most of the landings were dried unsalted, with the balance sold fresh or salted.

Norwegian Landings and Utilization of Mature and Young Cod

Utilization	1961 to 4/22	1960 to 4/23	1959 to 4/25	1958 to 4/19
	(Metric Tons)			
Drying (unsalted)	51,513	41,155	70,895	47,120
Salting	24,686	29,810	15,877	27,811
Fresh market and for fillets	21,013	16,874	22,284	14,882
Total Landings	97,212	87,839	109,056	89,813

The Lofoten cod fishery season ended officially on April 24 with 41,664 metric tons with an ex-vessel value estimated at about Kr. 45 million (US$6.3 million). This was considerably better than in the 1960 season when fishermen landed a total of 37,387 tons.

At the height of the season only 8,878 men took part in the Lofoten fishery. This is the lowest participation since the State inspection service was started in 1880. Only once before, in the record year of 1947, have crews on fishing vessels received a larger share per man, mainly because of a surprisingly big catch, record high prices, and low participation.

The Lofoten season provided a good start for producers of sun-dried cod. With continued good landings, exports of sun-dried cod this year may reach a value of Kr. 39 million ($5.4 million).

The spring season off the coast of Finnmark looked quite promising in April. The catch from that fishery through April 24 was well over 27,000 tons, including 24,000 tons of cod. At the same time last year the catch was less than 20,000 tons of which cod accounted for 16,000 tons. (News of Norway, May 11, 1961; Fisket Gang, April 27, 1961.)

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EXPERIMENTAL TUNA FISHING OFF WEST AFRICA FAILS:

The six Norwegian fishing vessels which left Alesund last fall for West African fishing grounds to attempt tuna fishing on a large scale, have abandoned their project and returned home.

The fleet included the fisheries research vessel Johann Hjort, and the refrigerated transport vessel Caribia.

It is learned that the voyage, which was a trial run guaranteed by the Norwegian Government to owners and crew, was a failure.

Tuna were scarce and the owners expressed themselves as "disillusioned as to the prospects."

The Government guarantee has therefore been terminated. (Fishing News, April 7, 1961.)

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FIRST FACTORYSHIP TRAWLER DELIVERED:

Norway's only factoryship trawler, the M/S Havkvern II, was delivered in December 1960 to her owners in Bergen.

Built in Holland during the last war for the German Navy, the ship was sunk, salvaged after the war, converted for trawling, and given the name of Kelt. After an engine breakdown the trawler was sold to her present owners and has now been completely reconstructed into a modern factoryship trawler. The vessel is 202.4 feet over-all in length, has a 30.0-foot beam, and a depth of 15.8 feet.

Havkvern II is a starboard trawler and equipped with a 4-stroke, 8-cylinder Diesel engine, developing 1,250 hp. at 325 r.p.m. In addition, two auxiliary engines have been installed, plus a hydraulic winch and a steering engine. The trawler has two echo sounders, radar, and navigator. It is also equipped with machinery to manufacture fish meal and oil.

Norway (Contd.):

The factoryship trawler has a fresh-water generator and a skinning machine.

The freezing equipment (Freon 22) makes it possible to reach low temperatures with one stage. In the brine-cooled fillet freezers a temperature of -40° C. (-40° F.) is used, while the refrigerating room is based on direct evaporating and holds a temperature of -20° C. (-4.0° F.). The refrigerating room has a capacity of 125 metric tons of fish fillets. (Norwegian Fishing and Maritime News, vol. 7, no. 4, 1960.)

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GOOD PROSPECTS FOR DEVELOPING TUNA FISHERY:

Considerable shoals of bluefin tuna visit Northern European waters for about three months every summer. Details of recaptured specimens originally tagged in Norwegian waters indicate that the schools come from the Mediterranean, and that their visit to northern waters is merely a wild hunt for food. There migratory tuna prey on schools of fish like herring, sprat, and mackerel, and are also a dangerous enemy of the salmon.

Norway catches most of the tuna landed by North Sea countries. According to the Food and Agricultural Organization's fisheries statistics, Norway's landings were 3,004 metric tons in 1958, while Denmark landed 200 and Germany 400 tons.

Before 1947, the Norwegians caught about 200 tons of bluefin a year by harpoon handguns. In 1948, successful experiments with tuna purse seines persuaded several fishermen to take up this method, which resulted in landings of 2,563 tons in 1949. The bright reports of good earnings encouraged many skippers, and a record gross take of 11,480 tons was landed in 1952, while a record value was reported in 1955, when 352 purse-seine outfits divided 10,423 tons and almost £850,000 (US$2.4 million) between them. The peak period, which ended in 1955, was succeeded by a decline which has been due to the peculiarities of tuna behavior rather than scarce stocks.

The following table showing Norway's rather short tuna fishing history suggests it might be relatively simple to maintain a stable tuna fishery.

Norway's Tuna Landings, 1949-1960

Year	Landings	Value		Outfits Making Landings
	Metric Tons	1,000 Kroner	US$ 1,000	
1960	3,240	6,000	839	86
1959	2,491	4,136	578	97
1958	3,004	4,307	602	157
1957	5,009	8,188	1,145	218
1956	4,135	6,899	965	244
1955	10,423	16,971	2,374	433
1954	9,451	14,725	2,059	1/
1953	7,951	9,707	1,358	1/
1952	11,480	16,126	2,255	1/
1949	2,563	3,707	519	1/

1/Data unavailable.

Differing results between vessels are common to all fisheries, but in Norway, tuna fishing has been subject to violent fluctuations. The table shows a decrease in participation from 433 outfits in 1954, to 86 in 1960. (An "outfit" consists of the three boats necessary for tuna purse-seining.) Persevering owners have, however, bought several of the big seines for repair with the result that no new tuna purse seines have been made in recent years.

Since 1955, the weather has been a limiting factor, as the shoals have remained in the open sea instead of driving into sheltered waters as they did during the peak period. The main difficulty is, however, the behavior of the tuna itself.

The tuna usually arrive in Norwegian waters in July. They appear anywhere within the 800 nautical miles between Haugesund and Tromso, where the shoals may stay in an area for a day, moving on again the next--faster than any vessel can steam.

Considering the impossibility of hunting the fish over such a vast field, and also because of the idle days due to bad weather or no fish, the fishermen have found it best to operate from central bases. The experience gained during these years shows that certain areas offer better possibilities than others, and it may be mentioned the tuna catch off Sogn og Fjordane and Hordaland amounted to 65 percent of the total landings in 1958, and 90 percent in 1960. The fishing north of this area has, with a few exceptions, been generally poorer, and in the south, along the Skagerrak coast and in Oslofjord, it has been only incidental. Several schools have, however, been seen every year.

In 1960, 86 purse-seine outfits landed 3,240 tons of tuna; 9 were without any catch

Norway (Contd.):

at all. Of the mentioned outfits, 34 were based south of Stad, or in the vicinity of the season's main fishing field. Their average catch was 56 tons valued at $14,560, which indicated reasonable average earnings, but the catch varied between boats--one had less than 5 tons. The most successful outfit caught 240 tons valued at US$61,600. After deduction of operational costs, the crew were entitled to 50 percent of the proceeds which means that each member would receive $2,800--a good income for less than 3 month's work. (The 1960 season began on July 16 and ended on October 8.)

To get within fishing distance of the schools is a difficult part of tuna purse-seining. The fish are always moving at a speed governed by the type of food for which they are hunting. They are said to swim comparatively slow when after herring, faster for mackerel, and the fastest when their prey are few, or none. The end of the season is usually characterized by the virtual impossibility of getting within fishing range. This is a natural phenomenon as in the autumn the bait shoals are few and take to deep water because their food source--the plankton of the surface layers--is exhausted.

The Norwegians use a tuna purse-seine net of about 350 fathoms in length, 40 fathoms in depth on the wings and 50 fathoms in the center of the bag. Mesh size is 7.9 inches. An outfit consists of a deck purse-seine vessel of 60 to 70 feet, and an auxiliary vessel of about 50 feet, with a powerful engine. The purse seiner has also an open motor boat ("arm" or "ear" boat) for making the purse, and the auxiliary's task is to hold the purse seiner against the wind or clear of the net. The complement for both the vessels is 10 to 12 men.

Speed and precision are highly essential in shooting and hauling the net. The difficulties end when the net has been retrieved since the shoals can only swim in the bag.

As all tuna scouting is by eyesight, the purse seiners are fitted with a foremast lookout nest. A plane is also chartered for scouting and costs the fishermen only about a fraction of a cent per pound landed. (World Fishing, December 1960.)

Note: Kroner values converted at rate of 7.15 kroner equals US$1.

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MULTIPURPOSE FISHING VESSELS PLANNED:

A new type of combined stern trawler-mid-water trawler-purse seiner is to be built in Norway after nearly two years' research in cooperation with fishermen, the Trondheim model testing tank, and a Scottish firm, pioneers of stern-type factory-trawlers. For purse-seining, the vessel will be fitted with power blocks.

These triple-purpose vessels will be 151 feet long over-all, with a moulded beam of 28 feet and loaded draught of 14 feet 6 inches. Fish hold capacity will be 10,000 cubic feet, meal tanks 2,000 cubic feet, and 30 tons of fish oil will be carried in the double bottom. Two continuous decks will provide sheltered space for sorting, cleaning, and gutting the catch, and there will be access to all parts of the vessel without crossing the open deck. A crew of 20 will be accommodated in single or double cabins, and facilities will include two large drying rooms for the crew.

The vessels will be fitted with a variable pitch propeller encompassed by a nozzle rudder. Estimated cost of building these vessels in Norway is about US$497,000. (Australian Fisheries Newsletter, March 1961.)

Peru

FISH OIL PRODUCTION AND EXPORTS, 1955-60:

If Peruvian fish oil production in 1961 reaches 67,000 short tons, as tentatively forecast, almost 60,000 tons will be available for export this year.

Exports of a record 38,584 tons in 1960 were twice the previous record of 18,921 tons in 1959 and 7 times the 5,503-ton average of 1955 through 1959. Data on 1960 exports by destination are not available. In prior years, however, Western Europe received practically all of Peru's fish oils.

Peru's Production and Exports of Fish Oil, 1955-1960

Year	Production	Exports
	(Short Tons)	
1960	44,000	38,584
1959	26,120	18,921
1958	11,322	1,811
1957	8,454	4,781
1956	3,338	1,897
1955	1,354	102

Peru (Contd.):

The rapid rise in exports of fish oil reflects a similar increase in production. Domestic consumption has increased but more slowly than exports. In 1960, domestic consumption was estimated at about 8,000 tons against 1,200 tons in 1955. (Foreign Crops and Markets, U. S. Department of Agriculture, April 10, 1961.)

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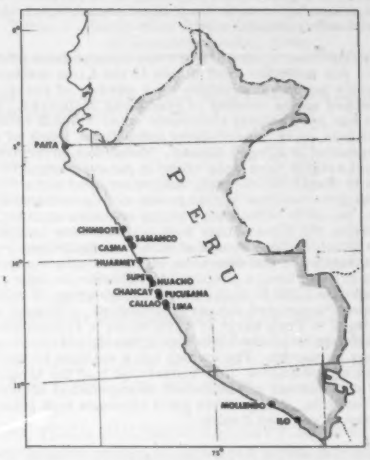
FISH MEAL INDUSTRY TRENDS, FIRST QUARTER 1961:

The improvement in fish meal prices was the most important development in Peru's fishery industry during the first quarter of 1961. From an average of about US$56 per short ton in January f.o.b. Peruvian ports, prices rose to nearly $72 in March. There were reports that so-called "floating parcels"--shipments en route to Europe, whose buyers were willing to sell--were being quoted at $117 a ton in early April. There were also rumors that speculative elements of the fish meal trade which made forward sales of Peruvian fish meal at the low 1960 prices were having difficulty covering their contracts.

A Peruvian marketing organization, whose membership consists of fish meal producers representing approximately 90 percent of the total Peruvian fish meal production, began operations on February 15, 1961. All fish meal exports from Peru except those of the non-member producers are handled by the newly formed organization on a quota basis, and the recovery of prices would appear to indicate that its operation has exercised a favorable, steadying effect on the industry. Information has not been made public regarding quotas assigned to each producer, nor the quarterly division of the 600,000 metric ton limit placed on Peru's fish meal exports for the current year as a result of the international meeting of fish meal producers in Paris last October. It is understood that the quarterly quota is related to the seasonal availability of anchovy, that is, it would be larger during a season of heavy fishing. Further, quarterly quotas for individual producers, particularly during the initial period of the organization, are understood to be flexible enough to take care of forward contracts.



Fish-reduction plants.

Two new fish meal processing developments have occurred in Peru. Two producers, one at Supe, the other at Chimbote, are using steam-drying equipment in new installations, which

Table 1 - Peruvian Exports of Fishery Products, 1960 and 1959

Product	1960			1959		
	Quantity	Value 1/		Quantity	Value 1/	
	Metric Tons	Million Soles	US$ 1,000	Metric Tons	Million Soles	US$ 1,000
Frozen Fish:						
Skipjack tuna	10,527	28.1	1,029	7,928	23.9	871
Other tuna	7,053	21.0	769	17,466	53.3	1,942
Swordfish	137	1.7	62	347	4.4	160
Shrimp (langostinos)	132	3.2	117	88	2.0	73
Total frozen fish	17,849	54.0	1,977	25,829	83.6	3,046
Canned Fish:						
Bonito	14,202	142.8	5,231	16,745	174.2	6,346
Tuna	797	7.9	289	776	6.4	233
Total canned fish	14,999	150.7	5,520	17,521	180.6	6,579
Fishery Byproducts:						
Fish meal	507,042	1,056.4	38,696	277,600	860.5	31,348
Fish oil	35,008	99.2	3,634	17,165	44.7	1,628
Sperm oil	13,500	46.3	1,696	10,004	33.9	1,235
Whale meal	2,783	4.7	172	3,317	9.7	353
Total byproducts	558,333	1,206.6	44,198	308,086	948.8	34,564
Grand Total	591,181	1,411.3	51,695	351,436	1,213.0	44,189

1/F.o.b. values, converted at rate of 27.30 soles equal US$1 in 1960, and 27.45 soles equal US$1 in 1959.
Source: Statistical Department, Callao Customhouse.

Peru (Contd.):

is considered to result in a better product than that from flame-drying equipment. A large new plant on the shore just north of Callao, which installed equipment to recover residues from stickwater, previously wasted, is now making "whole" fish meal--dry solubles are added to ordinary fish meal to increase protein content to a guaranteed minimum of 70 percent. The producer is preparing to have the product tested in actual use in poultry and animal feeds.

Peruvian fish meal producers are not without their problems at this time. Air pollution from plants in the Lima metropolitan area has been a perennial problem for a number of years, and it has intensified as the number of plants has increased. The odors which are particularly noticeable under certain atmospheric conditions, have caused many complaints, some of which have even resulted in alleged illness. Numerous governmental and municipal actions have been taken in recent months to require plants to install deodorizing equipment, and many have done so. One governmental action prohibited operations between 5 and 9 a.m., so as to reduce the volume of fumes emitted. About mid-March, the Government took action to fine and/or close plants which had not complied with the regulations requiring the installation and operation of deodorizing equipment. Moreover, there has been a proposal to relocate the approximately 35 fish meal plants in the Lima-Callao area. Employed by a Government-appointed industry committee, a French expert was brought to Peru early in April under a $7,000, 90-day contract to attempt to locate a site for a fishing port to which the plants may be moved. The search for a solution to the problem is being continued. It is understood that the temporary closing of a number of plants had no significant effect on fish meal production. Many of the plant closures took place during a period of reduced fishing.

In third position among Peru's leading exports during the first nine months of 1960, fish meal was displaced by sugar which ranked third for the full year, as a result of increased sugar exports in response to the expanded United States sugar quota. For the full year of 1960, fish meal exports of 507,000 metric tons were valued at 1,056.4 million soles ($38.7 million), an 83-percent increase in quantity and a 23-percent increase in value over 1959. The 1960 exports of other fishery products varied in comparison with 1959. There was a 33-percent increase in exports of frozen skipjack tuna, but a 60-percent drop in shipments of other frozen tuna. Peru's shrimp exports increased 50 percent, but canned bonito was down 15 percent. (United States Embassy in Lima, April 11, 1961.)

Philippines

U. S. FRESH-WATER FISHERY EXPERT TO ASSIST IN ORGANIZING LIMNOLOGICAL LABORATORY:

The Chief of the Lake Erie Fishery Investigations for the U. S. Bureau of Commercial Fisheries was at the Food and Agriculture Organization (FAO) headquarters during March 1961 for briefing before beginning a year's assignment as an FAO fishery expert in the Philippines. He was scheduled to leave for Manila early in April.

As a limnologist, he will assist the Philippine Government in organizing the work for a limnological laboratory which is under construction. He will also conduct fishery and limnological investigations of inland Philippine waters. Limnology is the study of the physical, chemical, and biological conditions of fresh waters.

Portugal

FISHERIES TRENDS, FIRST QUARTER 1961:

By April 15, 1961, practically all of Portugal's cod handline sail and motor vessels had departed for the Newfoundland Banks. Most of the cod trawlers had left in late January and early March. Preliminary reports received from the trawlers on the Banks indicated that fishing may be better this year than in the 1960 season.

Sardine fishing was in its closed season from January 15 to April 15. Exports of canned sardines during January-February 1961 were about 20 percent less than in the first two months of 1960, with Portugal's three principal customers, the United States, Germany, and the United Kingdom, all taking less. Total canned fish exports also fell off, although exports of anchovies showed some improvement in both quantity and price.

Table 1- Portuguese Canned Fish Exports, Jan.-Feb. 1960-61

	January-February 1961			January-February 1960		
Product	Qty.	Value 1/		Qty.	Value 2/	
	Metric Tons	1,000 Escudos	US$ 1,000	Metric Tons	1,000 Escudos	US$ 1,000
Sardines	6,886	113,427	3,929	8,593	121,512	4,221
Anchovies. . .	806	20,046	694	717	17,027	591
Tuna	224	5,123	177	211	4,769	166
Other	178	2,956	102	251	3,429	119
Total	8,094	141,552	4,902	9,772	146,737	5,097

1/Values converted at rate of 28.87 escudos equal US$1 for Jan.-Feb. 1961.
2/Values converted at rate of 28.79 escudos equal US$1 for Jan.-Feb. 1960.

Landings in 1960 of sardines and anchovies, and production and exports of canned fish reflected a good production year for sardines, but production of anchovies fell off from 1959. Exports of canned sardines in 1960 declined from the 1959 level, but prices paid were higher. Anchovy exports in 1960, as compared with 1959, declined in both quantity and value.

Exports of canned tuna from Portugal have been increasing in the past few years, but remain small, with 224 metric tons exported in January-February 1961 as compared with 211 tons during the first two months of 1960.

An innovation in the Portuguese sardine canning industry will be the introduction of aluminum cans within the next year or so. Two Portuguese canneries and a Canadian aluminum company are establishing a plant near Matosinhos which will have an initial production of 12 million cans. The new firm is capitalized at US$35,000. The aluminum sheet for these cans may eventually come from a rolling mill to be built near Lisbon.

Late in 1960 Lisbon's new fishing dock (now under construction at Pedroucos) was leased to a new firm. Some further details on this dock, recently published, give the total enclosed area as 17,940 square yards, of which 8,372 will be for sorting, displaying, and salting of fish and the remainder for commercial, administrative, and other installations. A separate covered area of 1,435 square yards will be for unloading sardines and other fish. The unloading quay running in front of the building will eventually be 622 yards long and there will be an additional 837 yards of quay for other purposes. The cost of installations at the dock is estimated at US$1.4 million and the number of personnel to be employed is estimated at 700-800. (United States Embassy in Lisbon, April 17, 1961.)

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South-West Africa

FISHERY TRENDS FOR 1960:

South-West Africa's 1960 fishing season at Walvis Bay and Luderitz was very successful. The total pilchard and maasbanker catch quota of 310,000 short tons landed in 1960 yielded 55,122 short tons of fish meal, 14,905 long tons of fish oil, and a record pack of 4,713,474 cases (48 lbs. each) of canned pilchards. The total value of the 1960 production at the manufacturers' level was estimated at over 25 million S. A. rands (US$35 million), compared with an estimated 16.6 million rands ($23.2 million in 1959). The entire 1960 fish meal and fish oil production was sold. Fish meal production, however, still is not profitable due mainly to Peruvian competition, but profits from the sale of fish oil were reported to closely balance the fish meal losses. The real profits in 1960 came from the canneries. The year 1961 is expected to be another good year in sales of canned fish.

Table 1 - South-West Africa's Production of Sardine (Pilchard) and Spiny Lobster Products, 1959-1960

Item	Production 1960	1959
	(Short Tons)	
Pilchard:		
Canned	114,034	41,943
Fish meal	55,122	60,852
Fish oil	16,694	19,377
	(1,000 Lbs.)	
Spiny lobster:		
Canned	399.4	502.7
Frozen tails	1,060.0	2,478.3
Meal	2,029.4	2,386.5

The South-West African pilchard industry is not affected by the drop in world fish meal prices to the same extent as the pilchard industry in the Union of South Africa. The reason is that the fish are caught so close to the factories that they can be landed with very little spoilage, and are of good enough quality for canning. By contrast, in the Union of South Africa, the fish are caught so far from the factories that by the time they are landed, only a small amount of the catch is suitable for canning, and the bulk is processed into meal and oil.

The 1960 spiny lobster season was not as good as the previous year. The canned and frozen spiny lobster production for 1960 was down 51 percent as compared with 1959. In addition to the pilchard-maasbanker catch, about 15,000 tons of spiny lobster, snoek, and other fish was landed. The whitefish catch amounted to only 2,700 tons valued at 230,000 rands ($322,000), or less than 1 percent of the total catch. The most important single species was snoek of which 1,043 tons was landed. The 1960 spiny lobster catch amounted to 4,324 short tons. Prices paid to the boats in 1960 are shown in table 2.

Table 2 - South-West Africa Ex-Vessel Prices of Selected Species, 1960

Species	Rands/ Short Ton	US$/ Short Ton
Pilchards/maasbanker	9.20	12.88
Snoek	100.00	140.00
Spiny lobster	92.00	128.80
Cape hake	50.00	70.00
Soles	250.00	350.00
Kabeljou	67.27	94.18
Kingklip	250.00	350.00
Steenbras	67.27	94.18
Shark, skate, & others	55.00	77.00

The South-West African 1961 quota for pilchard and maasbanker was set at 275,000 tons, and it is expected that as much as 100,000 tons more will be added as a supplementary quota for the year.

The sixth pilchard cannery at Walvis Bay was scheduled to start operations during May 1961. (United States Consulate, Cape Town, March 30 and May 29, 1961.)

Note: One South African rand equals about US$1.40.

Spain

BILBAO FISHERIES TRENDS, FIRST QUARTER 1961:

Landings were so heavy during the anchovy fishing season which opened March 1, 1961, in the Bilbao area of northern Spain that members of the fishermen's association agreed to limit their catches, and insisted on minimum prices which ranged from 1.75 pesetas a kilogram (about 1.3 U. S. cents a pound) in Guipuzcoa and Vizcaya to 3.75 pesetas a kilogram (about 2.8 U. S. cents a pound) in Oviedo.

The problem stemmed from inadequate preserving and processing facilities. During the 1960 fishing season, many anchovies were dumped back into the sea when the price threatened to drop below one peseta per kilogram (75 U. S. cents a 100 pounds). It was hoped that a new fish-meal processing plant with a capacity of 50 tons a day will be completed next year near Bermeo in time to alleviate the situation. Additional plants and refrigeration facilities are needed, however.

Spain (Contd.):

General dissatisfaction was reported among the Bermeo fishing fleet on its return in March 1961 from the tuna fishing grounds off Dakar. Catches ran from 65 to 125 tons per boat, but the fish brought low prices because of their smaller average size. Reports were that the fleet may not return next year unless more satisfactory handling methods can be developed, and refrigerator fishing vessels were used. (United States Consulate dispatch from Bilbao, April 19,1961.)

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UNITED STATES AND JAPANESE TROPICAL ATLANTIC TUNA ACTIVITIES AFFECT TUNA CANNERS:

An article "The Paradox of Spanish Tropical Tuna," which recently appeared in two fishing industry trade journals, Industrias Pesqueras and Industria Conservera, deals with the concern of the Spanish tuna interests over recent activities of the Japanese and United States tuna interests in exploitation of the Atlantic tropical tuna. The article describes reported attempts by the Japanese to operate directly in Spain and recent United States purchases of tuna from Spanish fishing vessels as prejudicial to the Spanish fish-canning industry.

According to recent news items, a large United States canning firm with headquarters in California purchased during the winter of 1960/61 the catches of the Spanish tuna fleet fishing in West African waters. Normally the fleet's catches are purchased and processed by Spanish canning plants in the Canary Islands. These sales to the United States firm are regarded as representing a loss to Spain of potential wealth from exclusive Spanish exploitation of these tuna catches.

A translation of the article published in the Spanish fishery publication Industrias Pesqueras, April 1, 1961, follows:

"The increase in the production of species of the tuna family is a phenomenon of our times. The development of the tuna industry--fishery and processing--which started about twenty years ago with the spectacular operation of California tuna clippers in the equatorial zone, has been on the increase. World War II, when the United States (fishing) fleet became temporarily inactive, helped the development of the Peruvian fleet, which had overlooked its privileged position near the Galapagos--an inexhaustible source of supply. At the end of the war, the resumption of operations by the Japanese contributed to the development of the tuna industry in the Balboa Ocean which has reached an undreamed-of level.

"Unexpected also were the reactions of the consumer to the increased supply of canned tuna. The United States market for canned foods underwent a great change, and the results were highly satisfactory for the development of the new industry. Consumers in the United States, Cuba, Switzerland, welcomed the new food product.

"This movement has affected almost exclusively Pacific tuna. The Atlantic industry, mainly the European industry, kept to its traditional routine for over 15 years after the start of the development of United States and Japanese tuna fisheries. The importance of the massive resource and its future possibilities have been grasped only after a long time, and the Atlantic tropic included in the usual fishing zones.

"However, quality was represented by white meat tuna, which roams our coasts. There were no large-scale operations, so much to the United States taste, but there was always the possibility of increasing consumption, in the event of increasing catches. It seems that this moment has arrived, and it is a good idea to foresee the possible turn of events.

"For some years now the Japanese have been trying to introduce themselves into the area of Atlantic tuna. Their fleet based in Recife (Brazil) is one of the more evident results of the Japanese industrial development, in a field that seemed to be reserved to Western countries. It is no secret that an important Japanese firm has contacted the Consorcio Almadrabero and other Spanish industrial groups in connection with the use of modern units in the capture of tropical tuna and to process it in factories in the South of Spain.

"These first Eastern steps have not been overlooked by the large United States canneries. The latter control most of the Californian fleet, and buy in advance their landings of frozen tuna, but they have not abandoned the Atlantic and since 1954 have extended their plants to Puerto Rico, considering no doubt the convenience of obtaining close

Spain (Contd.):

to the source of supply catches of tuna from the Caribbean and the Gulf of Mexico.

"The Puerto Rican canning industry is now receiving important supplies of tuna catches off Dakar by Spanish 'tuna clippers.' And the large United States firms, with which the Spanish canneries should compete on the basis of quality, have started an intensive publicity campaign on the product processed from the raw material bought from the Spanish fleet from Bermeo, at prices and in conditions agreed upon at the beginning of the last fishing season.

"This episode should not be ignored. Its economic importance cannot be denied, both now and in the future. The Spanish canning industry has reasons to feel uneasy about this situation.

"Tropical tuna, which was captured during the fall-winter period by the small tuna boats from the Cantabrian, used to be absorbed by the fish canning plants in the Canaries. These plants were for the most part branch factories of plants established in the Peninsula (Spain).

"Foreign competition started at the beginning of the present season, and the large United States canners secured a new source of supply for Atlantic tuna. At the same time they forced Spanish canneries in the islands into inactivity by depriving them of a source of supply that they could not replace.

"There is no doubt that a difference in prices influenced this change. Perhaps the possibility of foreign competition in the national market should have been foreseen. In any case, it is now a question of considering the consequences that a recurrence of this situation in future years might have on the interests of the Spanish fish canning industry.

"It is true that the Americans pay in dollars and pay higher prices than those paid in other years by the canneries in the islands. But we cannot ignore that the difference is not insurmountable from the point of view of the income of ship owners and crew members. Even less, the fact that the dollar income for the Public Treasury would be much greater if, instead of selling tuna in its original state, the finished product were exported. The latter would, in addition, provide other advantages such as a greater employment, the use of national raw materials, etc.

"It will be seen that the subject is an interesting one from the point of view of the Spanish industry. Because, whatever the eventual advantage to the fishermen, other interests should also be kept in mind since they represent worthwhile enterprises."

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VIGO FISHERIES TRENDS, JANUARY-MARCH 1961:

Fish Exchange: Landings at the Vigo Fish Exchange for the first quarter of 1961 amounted to 14,387 metric tons, an increase of 2,419 tons over the first quarter of 1960. The value of the catch was 156,191,000 pesetas (US$2,603,000), an increase of 14 percent over the value for the corresponding quarter of 1960. Catches for the fourth quarter of 1960 were 19,141 metric tons with a value of 170,647,000 pesetas (US$2,844,000). The average price per kilo for the first quarters of 1961 and 1960, and for the fourth quarter 1960 were 10.84 (8.2 U.S. cents a pound), 11.63 (8.8 U.S. cents a pound), and 8.90 pesetas (6.6 U.S. cents a pound), respectively.

The sardine catch, which represented the largest landings in the fourth quarter of 1960 with 7,026 metric tons, was minimal during the first quarter of 1961 because of a closed season

Table 1 - Vigo Landings and Average Ex-Vessel Prices for Selected Species

Species	1961			1960					
	January-March			January-March			October-December		
	Qty.	Avg. Price		Qty.	Avg. Price		Qty.	Avg. Price	
	Metric Tons	Pesetas/ Kilo	US$/ Lb.	Metric Tons	Pesetas/ Kilo	US$/ Lb.	Metric Tons	Pesetas/ Kilo	US$/ Lb.
Small hake	4,519	16.81	12.7	2,498	20.28	15.3	2,434	24.00	18.1
Pomfret	1,984	7.46	5.6	3,248	8.45	6.4	72	9.30	7.0
Faneca (Phycis phycis)	879	6.29	4.8	604	7.16	5.4	648	6.73	5.1
Hake	91	60.63	45.8	85	58.74	44.4	125	70.35	53.2
Horse mackerel	753	5.88	4.4	1,198	5.57	4.2	3,430	3.66	2.8

Spain (Contd.):

during half of the quarter. Pomfret landings increased substantially after the disappointing level of the fourth quarter in 1960 but did not approach the level of the previous year. The past winter's low landings were, in some instances, attributed to the system of catch division between vessel owners and the crew known as "a la parte." Under this system the individual crew members keep for themselves, in addition to their share of fish netted, all they catch with lines individually. It was reported that during the previous fishing season, individual landings by crew members amounted to 80 percent of the total pomfret landings which made it uneconomical for the vessel owners to send out the fleet for this species. According to those sources, the crews, having made relatively good money during the earlier albacore season, felt no economic pressure to agree to vessel owners' demand for a change in the catch division system in a manner more favorable to the owners.

Small hake prices, as indicated in table 1, were substantially lower than those in the previous quarter because of very plentiful supplies. Industry requests for permission to export frozen small hake to relieve the downward trend of domestic prices were reportedly refused. It was understood that the Government prefers that plentiful fish supplies continue to result in lower fish prices to counteract consumer pressure from causing price rises in meat.

Fish Canning and Processing: The first quarter of 1961 was a period of seasonally light activity for the fish canning industry as is normal between the end of one sardine season in December and the beginning of the next in April. Recent price increases of 15 to 20 percent for most species of canned fish sold in the domestic market have reportedly further reduced sales, already feeling the effects of consumer resistance to high prices. Canners claim, however, that higher raw material costs--principally for imported tinplate, but also for some species of fish and shellfish and for olive oil--made the increased prices mandatory.

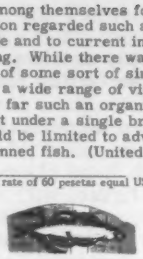
Exports of Canned Fish: A questionnaire concerning fish products exports was circulated during the first quarter by the Ministry of Commerce to various organizations with an interest in the subject. Replies submitted from Galicia recommended various measures to develop Spanish exports, including: (1) renovation of the coastal fishing fleet which supplies most of the species processed; (2) adoption of modern fishing methods common in other countries; (3) importation of up-to-date equipment for the fleet including nylon nets, electronic sounding devices, mechanical net haulers; (4) modernization of canning plant and equipment; (5) formation of a single exporting-organization; (6) importation of such species as tuna for the canning industry when domestic landings fall short of the industry's needs; and (7) establishment and enforcement of regulations for both containers and quality control. Also included in the responses was acknowledgment of the need for a thorough study of the fishery products industry in Spain as a basis for any Government assistance and export promotion program.

Although there was general agreement among the responses to the questionnaire as to what general measures should be taken, there was some disagreement as to certain specific steps. For example, one reply recommended the establishment of minimum export prices to prevent Spanish exporters from competing among themselves for export markets, while another organization regarded such a step as contrary to principles of free trade and to current international tendencies against price-fixing. While there was general agreement as to the importance of some sort of single export organization, there still existed a wide range of views within the canning industry as to how far such an organization should go in attempting to market under a single brand name, or whether it: activities should be limited to advertising to gain acceptance of Spanish canned fish. (United States Consulate, Vigo, April 19, 1961.)

Note: Values converted at rate of 60 pesetas equal US$1.

Table 2 - Distribution of Landings at Vigo, First Quarter 1961, and First and Fourth Quarters 1960

	Shipped Fresh to Domestic Markets	Canning	Other Processing (smoking, drying, fish meal, etc.)	Local Consumption
	(Metric Tons)			
1st Quarter 1961	10,637	1,045	1,888	817
4th Quarter 1960	10,336	4,601	3,179	1,025
1st Quarter 1960	9,821	829	389	929



Sweden

FUNDS ALLOTTED FOR ADVERTISING OF FISHERY PRODUCTS:

The Swedish Central Office for Fish Propaganda has been granted 100,000 crowns (US$19,300) for advertising fish during the fiscal year beginning July 1, 1961. Import fees levied on fishery products will be used to obtain the money. The fund will be administered by the Swedish Board of Agriculture.

The Board of Agriculture originally proposed that the money be paid out direct to the Central Office for Fish Propaganda from the price regulation fund. This plan, however, was not supported by the Council of State, the United States Consulate in Goteborg reported on May 8, 1961.

* * * * *

SHRIMP PRICES DROP DUE TO INCREASE IN LANDINGS:

Prices for shrimp in Sweden have for some time been declining. The reasons are: (1) increased supplies in late years; and (2) imports of shrimp from Norway.

During the past two years shrimp fishing has been intensified and carried out in a completely different way than formerly. The vessels are larger and more powerful and the equipment has been improved.

Sweden (Contd.):

In addition, the number of vessels engaged in shrimp fishing has increased considerably. For example, in the Gravarne district on the west coast, there were about 25 shrimp trawlers two years ago; there are now 54 trawlers. In the Smogen area there were previously about 45 shrimp trawlers compared with 63 at present. With one exception all of the trawlers in the Smogen district now fish for shrimp. This same tendency is also apparent in the Gravarne district, where more and more herring trawlers are changing over to shrimp fishing.

The result of this trend has been that by reason of the increased capacity of the vessels, shrimp fishing has been extended farther out to sea and to a greater depth. Consequently, landings of shrimp have grown in number and quantity and prices have dropped.

There is a control, however, which prevents shrimp fishermen from landing as much shrimp as they might be able to or wish to land. A vessel with a 2-man crew may land a total quantity of 270 kilos (about 595 pounds) of cooked shrimp per week, while a vessel with a 3-man crew is limited to 375 kilos (about 827 pounds) of cooked shrimp per week, and a vessel with a 4-man crew is restricted to 480 kilos (about 1,058 pounds).

In the case of raw shrimp for industrial canning purposes, a 4-man vessel may land a maximum quantity of 600 kilos (about 1,323 pounds) per week; a 3-man vessel may land 450 kilos (about 992 pounds); and a 2-man vessel 300 kilos (about 661 pounds). A maximum of 50 percent of the fixed weekly quantity may be landed during one fishing trip.

Despite these limitations, as much as 20 metric tons of cooked shrimp were landed recently in one week at the Gravarne fish auction. Only a couple of years ago a weekly supply of 9 tons was considered very large.

Total landings by Swedish fishermen of shrimp in Sweden in 1960 amounted to 3,563 tons valued at 15,387,000 crowns (US$2,970,000). Import figures covering shipments of shrimp from Norway are not available at this time.

An indication of the relative importance of the Swedish centers is gained from the following statistics relating to Swedish shrimp landings in 1960: Stromstad leads with 1,168 tons of shrimp valued at 5,041,000 crowns (US$973,000), followed by Smogen with 968 tons valued at 4,141,000 crowns ($799,000), and Gravarne with 768 tons worth 3,396,000 crowns ($655,000).

The growing importance and attraction of shrimp fishing is evident when it is realized that out of the 88,700,000 crowns ($17,119,000) worth of fish landed in 1960 by Swedish fishermen on the west coast, shrimp accounted for one-fifth of the total value.

There are no minimum or guaranteed prices for cooked shrimp. For other shrimp there is a minimum price of 1.75 crowns per kilo (15.3 U. S. cents a pound).

Shrimp are no longer considered a table luxury in Sweden, according to fish auction officials. Consumers have discovered they can buy this delicacy at a reasonable price and sales are increasing.

Despite this wider and growing market outlet, imports of Norwegian shrimp are worrisome to Swedish shrimp fishermen.

At the annual meeting of the Gravarne division of the West Coast Fishermen's Central Association, it was stated that difficulties for Swedish shrimp fishermen have arisen out of the European Free Trade Association (EFTA) in the form of the large quantity of shrimp imported from Norway. It was also asserted that Norwegian shrimp are cheaper because of a high subsidy. A decision was made at the meeting to introduce a motion at this year's fisheries congress pointing out that Norwegian shrimp imports should be restricted for the benefit of the Swedish shrimp catch, and that Norwegian shrimp sells at lower prices with the result that prices of Swedish-caught shrimp drop accordingly.

Recent cooked shrimp prices at the Gravarne fish auction have fluctuated between 2.90 crowns and 4.75 crowns per kilo (25.4-41.6 U. S. cents a pound). At the Smogen auction, prices have ranged between 2.50 crowns and 6.75 crowns (21.9-59.1 U. S. cents a pound). This latter variation, however, was partly due to the poor quality of a large part of the offerings. (United States Consulate, Goteborg, April 19, 1961.)

* * * * *

STEEL TRAWLERS PURCHASED FROM EAST GERMANY:

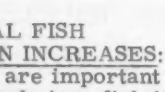
As of May 1961, a total of 13 steel trawlers were on order with a Brandenburg, East

Sweden (Contd.):

Germany, shipbuilding yard, according to a statement made by the Managing Director of a newly established Goteberg agency firm. The Swedish firm said it had sold the 7 trawlers which are to be delivered in 1961, and that while no definite sales have been made of the other 6 trawlers scheduled for delivery in 1962, interest in these was indicated from a number of sources.

The reported cost of an East German-built steel trawler is approximately 450,000 kroner ($86,900). These trawlers are about 102 feet long and 22 feet wide. They measure 263 gross registered tons, and will carry about 94.5 metric tons of fish. The motor is a 560 hp. Diesel engine giving the trawler a calculated speed of 10 knots. It is reported that some 450 of these series-built steel trawlers have been constructed for Soviet Russia.

At a press conference which the East German delegation to the Goteborg Swedish International Trade Fair held on May 8, 1961, the East German Acting Minister for Commerce and the counselor of the Ministry of Commerce both emphasized the importance of fish in Sweden's trade with East Germany. In the 1961 trading arrangement, fishery products represent 18 million kroner (US$3.5 million) of the total value of the trading list. Deliveries amounting to 11 million kroner (US$2.1 million) in value have been made to date. The East German officials said that if fish deliveries over and above the remaining 7 million kroner (US$1.4 million) were to be contracted, it would depend on whether East Germany could increase exports to Sweden, and that steel trawlers play an important role in those exports. In principle, they said, East Germany wishes to purchase from Sweden in order to balance their sales to Sweden, the United States Consulate in Goteborg reported in May 9, 1961.)

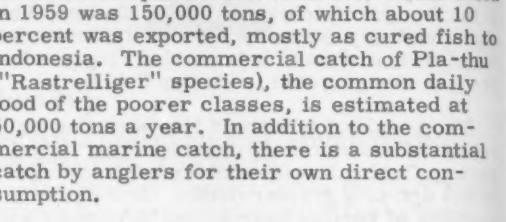


Thailand

COMMERCIAL FISH PRODUCTION INCREASES:

Fisheries are important in the economic life of Thailand since fish is the principal supplement to the people's rice diet, and constitutes the only important protein element in their food. The rivers are very productive and yield a considerable variety of fresh water species. In addition, the fishing grounds along the 1,500 miles of sea coast have sizable resources.

Thailand's commercial fresh-water fish production, which had been holding steady at about 50,000 metric tons a year through 1958, rose to 60,000 tons in 1959. All was used for home consumption. The total salt-water catch in 1959 was 150,000 tons, of which about 10 percent was exported, mostly as cured fish to Indonesia. The commercial catch of Pla-thu ("Rastrelliger" species), the common daily food of the poorer classes, is estimated at 50,000 tons a year. In addition to the commercial marine catch, there is a substantial catch by anglers for their own direct consumption.



Tilapia being netted from a pool in a Thai rice field.

In 1958, Thailand had a fishing fleet of about 2,200 boats with a total tonnage of 22,000 tons. The marine catch landed at Bangkok in recent years has been estimated at from 30,000 to 40,000 tons annually.

In addition to finfish, shrimp production has gained importance, particularly since the semigovernmental Cold Storage Organization has been providing cold-storage facilities at the port of Bangkok. The United States has become the largest customer for Thai shrimp since the first shipment to that country in April 1959. The 1959 United States imports of frozen shrimp from Thailand amounted to 176,000 pounds valued at $180,000. Through April 1960, Thai shipments amounted to 220,000 pounds.

Union of South Africa and South-West Africa

LANDINGS SET NEW RECORD IN 1960:

As expected when the pelagic shoal fish catch at the end of July 1960 reached the outstanding figure of 453,387 short tons, the total Union of South African fish landings also reached a new record in 1960. In addition to the large pelagic shoal fish landings a record 135,206 tons was landed by trawlers, an estimated 30,000 tons from line-fishing boats, and 10,000 tons of spiny lobster. The catch soared from 491,717 tons in 1959 to 628,593 tons in 1960--the largest single rise in any year in the history of the Union of South Africa industry. This figure does not include 28,243 tons of mackerel and maasbanker caught during the special November-December season on the West Coast, which brings the total catch to 656,836 tons.

Combining Union of South Africa and South-West Africa catches, the landings in 1960 totaled 981,836 short tons--a record total almost 180,000 tons more than the 803,113 tons landed in 1959, and almost 300,000 tons above the 546,951 tons landed in 1958. The pelagic shoal fish industry contributed the bulk of the South-West and Union of South Africa total.

The South African shoal fishing season in 1961 opened with a January catch nearly three times higher than the best in the same month of any previous season. This was followed by landings in February which were expected to exceed 90,000 tons to set another record for the industry, and to produce 170,000 tons of pilchards, maasbanker, and mackerel in only two months' fishing. The brightest feature of this good fishing is that the shoals appeared in the area from which they had all but vanished 4 or 5 years ago--around St. Helena Bay. The fish were reported to be fine, fat and mature, good for canning (both because of their condition and because of the short haul to the factories), and with a high oil content. Most of the factories had, during February 1961, to call for a slow down in fishing so that plants could handle the fish. Despite this, one boat--the 69½-foot long Bellevanti, brought in 2,180 tons during the month. (The South African Shipping News and Fishing Industry Review, March 1961.)

Note: Also see South-West Africa in this issue on p. 87.

Union of South Africa

PILCHARD-MAASBANKER FISHERY, JANUARY 1961:

The Union of South Africa Cape west coast fish catch in January 1961 comprised 69,879 short tons pilchards, 6,745 tons of maasbanker (jack mackerel), and 3,821 tons mackerel. The total catch was 80,445 tons. This compares with 23,162 tons pilchards, 5,694 tons maasbanker, and 2,147 tons mackerel, a total of 31,003 tons in January last year; and with 10,452 tons pilchards, 49 tons maasbanker, and 6,139 tons mackerel, a total of 16,640 tons in January 1959.

The January 1961 catch yielded 17,286 short tons of fish meal, 1,342,460 Imperial gallons of fish body oil, 2,312,272 pounds canned pilchards, 1,763,416 pounds canned maasbanker, and 819,366 pounds canned mackerel. (The South African Shipping News and Fishing Industry Review, March 1961.)

U.S.S.R.

FACTORYSHIP TRAWLERS FISHING OFF SOUTH-WEST AFRICA:

Research and large factory trawlers of the Soviet fishing fleet, in their far ranging operations to boost the Russian catch to 4,626,000 metric tons in 1965, have been moving steadily south off the coast of Africa. For some months now there have been reports of trawlers off the Congo, Angola, and South-West Africa.

In February 1961, the research trawler Muksun (which had previously visited Cape Town) and the factory trawler Izumrud called at Walvis Bay for stores; and three more vessels, the Radichev, the Atiubinsk, and the Taras Schewtchenko, were sighted 3 to 4 miles off Pelican Point.

Some of these ships are among the largest and most modern of their type afloat. They are stern-trawling factoryships, freezing or canning their catch and producing fish meal. Their visit has caused some concern in the South African fishing industry. It has long been known that the U. S. S. R. has had a massive program for the building of factory trawlers. German yards have built 24 ships of the Pushkin class; the later Majakowski class is being built in a shipyard at Nikolajewsk on the Black Sea; and, at the Second World Fish-

U. S. S. R. (Contd.):

ing Boat Congress held in Rome in 1959, a U.S.S.R. delegate stated that his country had been operating stern-chute factory trawlers since 1955. He also said that a further improved type of factory trawler had been designed for construction in Russia. He said emphasis had been placed on preserving catches by means of ice cooling and/or freezing.

Since that Congress, there have been indications that these latest trawlers have been developed for long-range operation in tropical or subtropical waters, disposing of their processed catch direct to export markets, and perhaps carrying part of it back to their home port of Kaliningrad in the Baltic.

It was predicted that the Russians would follow the example of the Japanese and find part of their huge yearly catch in west and southern African waters. A trawler of the Pushkin class had earlier been reported in South African waters about 100 miles offshore that had caught and processed tons of shoal fish. The fact that she was there was an indication of Russian "interest in those fishing waters and also of the wide range of the latest Russian fish factoryships."

In a report published early last year a Russian trade paper emphasized the importance of Atlantic fishing and said that, to help expand operations, more trawler-type exploratory and fishery research vessels should be made available. Kaliningrad, home port of the visiting ships, was mentioned as one of the bases allotted four research ships of the "Ocean" type.

The research trawler Muksun probably ranges ahead of the factoryships trying out trawling banks and locating large concentrations of fish. That she was in Cape Town indicates that Russian South Atlantic fishing may not stop at Walvis. There have been rumors in Walvis Bay since December of Russian vessels off the Angola and South-West Africa coast.

Muksun is a deep-sea trawler fitted with port and starboard side-trawling gallows, Diesel-powered, 189 ft. 9 in. long with a 30-ft. beam, and a cruising speed of 10 knots. She was built in Britain in 1956 and is well equipped with fish-finding and navigational instruments, including radar. She carries several scientists aboard and has been away from her home port of Kaliningrad for about a year.

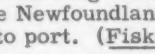
Three days after the Muksun was berthed, the Majakowski class factory trawler Izumrud docked. The 3,700-gross ton stern trawler is powered by a Diesel and was built in the U. S. S. R. She is 269 ft. long between perpendiculars and has a 40-ft. beam. Built a little more than a year ago, she left Kaliningrad three months before calling at Walvis Bay. According to members of her crew of 94 men and 6 women, she fished in the North Atlantic and in the Gulf of Guinea before moving south. The vessel is a well-equipped modern factory with deep-freezing plant, refrigerated holds, gutting and cleaning rooms, and a fish meal and oil plant. (The South African Shipping News and Fishing Industry Review, March 1961.)

* * * * *

MOTHERSHIP FLEET PRODUCTION OF NORTH ATLANTIC HERRING, WINTER 1961:

The Soviet mothership Iokhannes Vares during three months in the North Atlantic herring fishery this winter processed 1,740 metric tons (about 3.8 million pounds) of herring, and serviced 100 fishing vessels with supplies and technical assistance. Of the processed catch, 4,000 five-kilogram (about 11 pounds) containers consisted of "special salted herring." After a short period in port, the mothership was scheduled to go to the banks off Newfoundland to take part in the ocean perch fishery, according to the March 14 issue of Sovjetskaja Estonija.

At the same time Sovjetskaja Litva stated that, in addition to the large freezer trawler Ljudas Gira and six medium trawlers, six other vessels, which had participated in the North Atlantic herring fishery, were ordered directly to the Newfoundland banks without first going into port. (Fiskets Gang, April 20, 1961.)



United Kingdom

FISH MEAL PRICES, APRIL 1961:

Fish meal prices reported by a British trade periodical on April 29, 1961, were as follows:

United Kingdom (Contd.):

Type of Fish Meal	Protein Content	Date Quoted	£/s./d. per Long Ton	US$ per Short Ton
S. Africa (white fish)	65	4/29/61	50/7/6	125.94
Peru (branded)	65	4/29/61	46/0/0	115.00
Peru (average quality)	65	4/29/61	44/10/0	111.25
Iceland (white cod)	70-73	11/26/60	42/0-48/16	105.00-122.00
Iceland (herring)	70	4/29/61	51/12/6	129.06
Denmark (herring)	73	4/29/61	54/15/0	136.87
Domestic (white fish)	66	1/ 4/29/61	53/10/0	133.75
Domestic (herring) 2/	68-71	4/29/61	53/0/0	132.50

1/Effective March 1, 1961; in bags.
2/In bags ex-warehouse, 8-11 percent oil.
Notes: Imported fish-meal prices are c.i.f. current shipments, and domestic meal prices (net cash) are ex-plant, in 6 long-ton lots and bagged, unless otherwise reported.
Values converted at rate of £1 equals US$2.80.

* * * * *

GRANTS AND LOANS FOR SCOTTISH FISHING VESSELS RESTRICTED:

The British White Fish Authority has decided to suspend until September 1961 approval of applications for the building of further trawlers for the Scottish fleet under their grants and loans program. A brake is also to be put on the expansion in numbers of inshore boats and the policy will be to maintain the seine-net fleet at its present strength. These decisions were made known to Aberdeen trawler owners at a meeting of members of the Aberdeen Fishing Vessel Owners' Association late in February this year.

Towards the end of 1960 the Scottish Committee of the White Fish Authority met the directors of the Aberdeen Fishing Vessel Owners' Association when the size and composition of the Scottish fishing fleet was discussed.

On February 9, this year, the chairman of the association and two other directors had consultations with the White Fish Authority in London, when they advised a temporary suspension of building so far as the Scottish fleet was concerned.

The Secretary of the Scottish Committee of the White Fish Authority states that the Authority has been giving considerable thought to their future policy regarding the administration of the grants and loans program.

At a meeting which took place on February 9 it had been tentatively agreed that in view of the uncertainty over future international fishing limits, particularly at Faroe Islands; the substantial measure of replacement and modernization which had already taken place in the fleet; the present "crewing" position; and certain recommendations in the Fleck report, it seemed necessary to slow down to a considerable extent the rate of new building in order that a reappraisal of the whole situation might be made over the next 15 to 18 months.

The Committee had therefore decided to accept the Association's advice and decided to to suspend the issue of any further approvals for near- and middle-water trawlers for Scotland until September 1961 when the position will be reviewed in consultation with the industry.

The Scottish Committee had taken note of the Aberdeen owners' request that appropriate allocation under the grants and loans program should be reserved against a possible resumption of building after September, and that the grants and loans should be issued under the same terms and conditions as applying at present.

The Committee added that the seine-net boats required under the Government's training program for the fishermen of the Outer Isles would not be affected by the standstill. Continued assistance would also be given for the re-engining of vessels and the provision of boats for creel fishing.

The owners would lose nothing by the standstill. Appropriate funds would be reserved in the interval for Aberdeen use. Thirty Aberdeen applications were pending

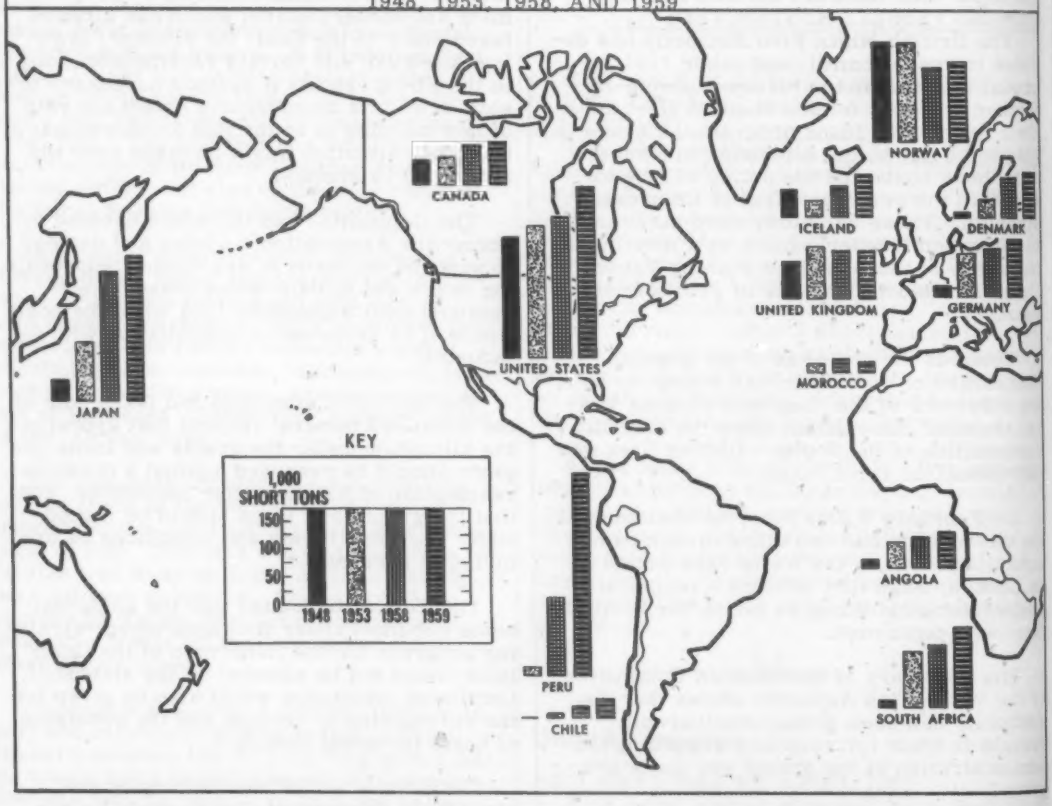
United Kingdom (Contd.):

approval by the authority and these were deferred until September. (Fish Trades Gazette, March 4, 1961.)

Yugoslavia

TECHNICIANS MAY GO TO JAPAN TO STUDY TUNA PROCESSING TECHNIQUES: Yugoslavia has contacted Japanese tuna packers concerning a proposal to send two technicians to Japan to study tuna processing techniques, including the utilization of tuna waste products. It seems Yugoslavia hopes to go into full-scale production of canned tuna, utilizing Japanese frozen tuna, and wants to learn all there is to know about tuna processing methods. (Shin Suisan Shimbun Sokuho, May 2, 1961.)

PRODUCTION OF FISH MEAL, BY MAJOR PRODUCING COUNTRIES, 1948, 1953, 1958, AND 1959



FEDERAL ACTIONS

Department of Agriculture

AGRICULTURAL MARKETING SERVICE

PILOT FOOD STAMP PLAN INCLUDES FISHERY PRODUCTS:

Fish and fishery products are included in the list of products that can be purchased by needy families under the Pilot Food Stamp Project. Policies and general regulations for the Pilot Food Stamp Projects, to be operated in 8 pilot areas for the purpose of encouraging the domestic consumption of agricultural commodities and products thereof by increasing their utilization among low-income groups, were published in the Federal Register of May 13, 1961. The program is scheduled to be launched in the pilot areas on June 1. Originally fish and fishery products were not included among the items that could be purchased by the use of stamps. But the change in regulations have included fishery products, which will now receive the same consideration as other basic food products for human consumption.

The Pilot Food Stamp Projects will be operated in the Detroit, Mich. area; Franklin County, Ill.; Floyd County, Ky.; Va-Hibbling-Nashwauk Area, Minn.; Silver Bow County, Mont.; San Miguel County, N. Mex.; Fayette County, Penn.; and McDowell County, W. Va. Under this program needy families will receive food stamps from the welfare agencies with which they can buy needed food for their families. The U. S. Department of Agriculture has not indicated how long the program is expected to be in effect, since this will depend upon the state of the Nation's economic condition.

The regulations as issued by the Department of Agriculture give the purpose and scope, definitions, administration, payments for certain costs of the certifying agency, certification of households as eligible, basis for issuing coupons to eligible households, methods of distributing and accounting for coupons and cash receipts, plans of operation, use of coupons by eligible households, participation of retail food stores, participation of wholesale food concerns, procedure for redeeming stamps, participation of banks, and miscellaneous provisions.

The definition for eligible foods reads: "'Eligible food (s)' means any food or food product for human consumption except: Coffee, tea, cocoa (as such), alcoholic beverages, tobacco, and those products which are clearly identifiable from the package as being imported from foreign sources."

Department of Health, Education, and Welfare

FOOD AND DRUG ADMINISTRATION

AMENDMENT TO REGULATION ON SOURCES OF RADIATION USED IN FOOD INSPECTION AND CONTROLLING PROCESSING:

The Food and Drug Administration of the U. S. Department of Health, Education, and Welfare in the Federal Register of March 2, 1961, published a proposal to amend the regulation providing for the safe use of certain sources of radiation used for inspection of foods, package food, and for controlling food processing.

The amendment incorporates certain changes in wording in the interest of clarity and accuracy and, in addition, to permit the safe use of the isotopes krypton 85, cobalt 60, and radium 226 for inspection of foods and food packages and for controlling food processes. Since the Food and Drug Administration did not receive any comments within the 30-day period from March 2, 1961, the amendment to the regulation became effective on April 28, 1961. The amended

regulation as it appeared in the Federal Register of April 28, 1961, prescribes the conditions under which sources of radiation may be safely used for the purposes of inspection of foods, packaged food, and for controlling food processing. Also, it specifies the type of information that is to appear on the labels of the radiation units.

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EXCEPTIONS FILED TO PROPOSAL TO RETAIN PROTESTED LABELING REQUIREMENTS IN STANDARD OF IDENTITY FOR CANNED TUNA:

On April 30, 1961, exceptions were filed to the proposed findings of fact which were issued by the Food and Drug Administration on March 31, on the labeling provisions of the standard of identity for canned tuna. The exceptions to the findings of fact and proposed order were with respect to the proposed requirement that "for water-packed tuna the name on the label should include the words 'in water'."

A Washington, D. C., attorney submitted exceptions on behalf of American Importers of Japanese Tuna, Inc., New York City; Agricultural and Marine Products Division, Japanese Chamber of Commerce of New York, Inc.; and the Tuna Packers Association of Japan, Tokyo.

In addition to filing exceptions to the findings of fact, the attorney requested "that the hearings be reopened to receive new evidence which was not in existence at the time of the hearings." According to the exception filed, the attorney's reference to the new evidence is contained in U. S. Fish and Wildlife Service Circular 88, entitled "Who Buys Canned Tuna, and Why?", published in June 1960.

An additional but similar exception was filed on April 21 by the vice president of an importing firm in New York City.

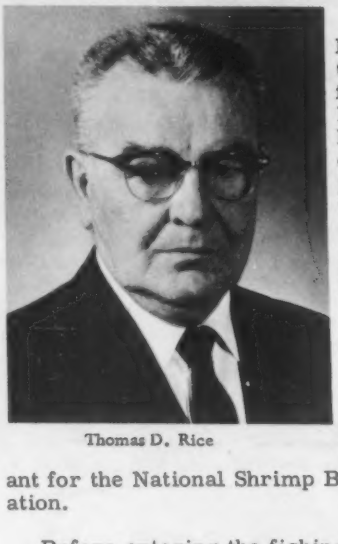
Note: Also see Commercial Fisheries Review, May 1961 p. 68.

Department of the Interior

FISH AND WILDLIFE SERVICE

SPECIAL ASSISTANT TO COMMISSIONER APPOINTED:

Thomas D. Rice, who has been executive secretary of the Massachusetts Fisheries Association since 1945, has been appointed special assistant to the Commissioner of Fish and Wildlife, Secretary of the Interior Stewart L. Udall announced on May 11, 1961. Rice reported for duty May 9.



Thomas D. Rice

Rice has a long record with the domestic fishing industry. For eight years he was part owner of a fish processing and wholesale distributing firm in Boston. He has served at various times as special consultant on fishery problems for U. S. Senate committees and for two years was a consultant for the National Shrimp Breaders Association.

Before entering the fishing industry, Rice was in the real estate business in Boston for seven years. He has also served as a deputy collector for the Internal Revenue Service and was a regional price specialist during World War II. He attended Boston College and Suffolk University in Boston. He was born May 8, 1902, in Boston, Mass.

THE PLACE of FISH
in diabetic diets
today's menu
lunch
BOILED SHRIMP - 10 small
Biscuits - 2 - 1" diam.
Broccoli - ½ cup
Cantaloupe - 1-6" diam.
Buttermilk made with whole milk
breakfast
HADDOCK, FRIED - 1 oz.
Grapefruit - ½
Cooked cereal - ½ cup w/milk
Toast with butter - 2 slices
Coffee with 1 tablespoon cream
dinner
COD FILLETS - 3 oz.
Cornbread - 1" x 1" cube
Carrots, cooked - 1 cup
Butter - 1 tsp.
Applesauce - ½ cup
Coffee, black

Interstate Commerce Commission

RULING CLAIMS MANY FROZEN PREPARED FISHERY PRODUCTS NOT EXEMPT FROM REGULATION FOR TRUCKS:

An ICC Examiner has reopened the question of the fishery exemption for trucks for many frozen prepared fishery products. In the W. W. Hughes "Grandfather" application (Proceeding No. MC-105782, Sub. No. 4), the ICC Examiner concludes "that deviled crabs, deviled clams, deviled lobsters, croquettes, codfish cakes, and other fish or shellfish products, which contain non-exempt ingredients (other than those which properly may be considered as incidental to the cooking process, such as seasonings, and also breading) are not within the exemption. These commodities are no longer fish or shellfish."

In the decision concerning the refrigerated trucking service ICC application, the Examiner says that the Bureau of Motor Carriers was wrong when it issued Administrative Ruling 110 on September 26, 1958, listing fish or seafood dinners, cod cakes, salmon croquettes, deviled crabs, clams, or lobsters as being exempt. The basis for the Examiner's opinion is that the amount of the basic fish ingredients in these products varies from 20 to 90 percent and the finished product includes many non-exempt ingredients. He reasons that the mixing of non-exempt commodities with the exempt commodities destroys the exempt status of the fish and seafood.

Efforts were made by fishing industry representatives in 1958 to have the fishery exemption clarified to finally establish that the fishery exemption extended to all frozen fishery products, whether breaded, cooked, or prepared. The fishing industry representatives will intervene in this case in an attempt to support Administrative Ruling 110. During the debate in the Senate on the Transportation Act of 1958, it was specifically declared that it was the intention of the Senate Commerce Committee in passing the bill to exempt "codfish cakes, deviled crab, fish with sauce, fish dinners, and similar seafood products." It was reasoned that the Senate Committee could not write into law all these various items which have seafood in them and that the criteria under the fishery exemption is perishability.

These informal rulings are tentative in the absence of authoritative decisions on the subject by the Commission. If the recommendation of the Examiner is adopted by the Commission, the informal interpretation of ruling No. 110 will be reversed.

Treasury Department

COAST GUARD

VESSELS WITH AUTOMATIC PILOTS WARNED TO MAINTAIN PROPER LOOKOUT:

The New Orleans office of the U. S. Coast Guard (Eighth Coast Guard District) in a letter dated April 5, 1961, to the Texas Shrimp Association requested that all fishing vessels operating on an automatic pilot maintain a proper lookout. For the sake of safety, this warning is applicable to all vessels. The letter points out:

"During the past year it has been necessary for this office to cite numerous Masters of fishing vessels for failure to maintain a proper lookout while their vessels were operating on automatic pilot. These violations come to the attention of this office as a result of investigations into collisions between fishing vessels while operating in the Gulf of Mexico.

"In most cases, the automatic pilot was placed in use and the Master, or the person in charge of the watch, left his station and either went below or went aft and engaged in duties which precluded his keeping a proper lookout while the vessel was under way, which resulted in collision with another fishing vessel.

"The failure to keep a lookout in the manner described above can only be interpreted as reckless and negligent operation and certainly creates a hazard to life and property. In cases of this kind, the Coast Guard is obligated to en-

force the navigation laws, but would rather see steps taken to prevent collisions under such circumstances. . . ."

The Coast Guard then went on to indicate that if owners and Masters of the vessels saw the neccessity of keeping a lookout at all times while the vessel is under way, a great majority of the collisions now occurring between fishing vessels would be avoided.

U. S. Supreme Court

ALASKA TAX ON FREEZERSHIPS UPHELD: The United States Supreme Court on May 1 decided Alaska may levy an annual license tax on freezerships used in processing salmon and other fishery products caught in Alaskan waters.

The State of Alaska appealed to the Court after the United States Circuit Court in San Francisco ruled the freezing and cold-storage activities of freezerships as a part of interstate commerce. The Circuit Court held any state privilege tax on such activities is barred by the Constitution's commerce clause.

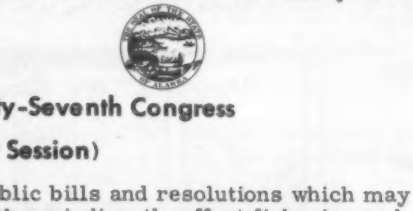
The Alaska levy fixes the annual tax at 4 percent of the value of fishery products frozen and put in cold storage. Alaska's appeal to the U. S. Supreme Court contended the freezerships were not engaged in interstate commerce but in business of a local nature.

The litigation originated in suits by Alaska to collect the tax from seven fishery firms.

Eighty-Seventh Congress

(First Session)

Public bills and resolutions which may directly or indirectly affect fisheries and allied industries are reported. Introduction, referral to committees, pertinent legislative actions, hearings, and other actions by the House and Senate, as well as signature into law or other final disposition are covered.



CATCH TRANSFER AT SEA: On May 18 the Senate Committee on Commerce reported S. 1222, a bill relating to documentation and inspection of vessels of the United States with amendment (S. Rept. No. 277). This bill would permit vessels that are documented or licensed to engage in the fishery and are therefore fishing vessels of the United States, to take the catch of another fishing vessel of the United States aboard on the high seas and transport it free of charge to a United States port. Vessels documented and licensed as fishing vessels are exempt from inspection and manning requirements, and enactment of this bill would relieve a vessel that takes a transshipment from complying with the requirements that apply to cargo vessels. This proposal is especially important to shrimp fishing vessels in the Gulf of Mexico.

S. Rept. No. 277 Relating to Documentation and Inspection of Fishing Vessels (May 18, 1961, report from the Committee on Commerce, to accompany S. 1222), 5 pp., printed. This bill, as reported with amendment, permits a vessel enrolled and licensed, or licensed, as a fishing vessel of the United States, to take on board and carry to a port of the United States, without compensation, the catch of fish of another U. S. fishing vessel, and would exempt such transporting vessel from the inspection requirements of section 4426 of the Revised Statutes (46 U. S. C. 404). The report discusses the purpose of the bill and presents statements from the Departments of Interior, Treasury, and Commerce. Committee reported the bill favorably with amendment.

On May 26 the Senate proceeded to consider S. 1222. Amendment recommended by Committee was agreed to, bill was read the third time, and was passed. As passed, provides that a U. S. fishing vessel which occasionally takes on board on the high seas and transports to a U. S. port without payment, the catch of another U. S. fishing vessel shall not be considered to be engaged in the transportation of freight for hire.

S. 1222 was received by the House on May 29 and referred to the Committee on Merchant Marine and Fisheries.

CHEMICAL PESTICIDES COORDINATION ACT: On May 15 a resolution of the Kansas Academy of Science was received in the Senate, registering approval of H. R. 4668, a bill providing for advance consultation with the Fish and Wildlife Service and with State Agencies that are responsible for wise use of biological resources before the beginning of any Federal program involving the use of pesticides or other chemicals or devices designed for biological controls, and recommends its enactment.

Congressman John D. Dingell (Mich.) on May 23, 1961, presided over an informal discussion involving representatives of Federal Agencies and private conservation organizations relative to controversial chemical pesticide programs which have damaged fish and wildlife values and poses undetermined threats to human health. Congressman Dingell has introduced H. R. 4668 which would require coordination between Federal Agencies and between them and State Agencies on the administration of chemical pesticide control programs.

During the discussion, it was pointed out that a new "ad hoc" coordinating committee had been formed at direction of the Secretaries of the Interior and Agriculture. Represented on the committee are the Agriculture Research Service and U. S. Forest Service of the Department of Agriculture, the Fish and Wildlife Service and Bureau of Sport Fisheries and Wildlife of the Department of the Interior, the Food and Drug Administration and the Division of Water Supply and Pollution Control of the Department of Health, Education and Welfare, and the Department of Defense. There is a strong possibility that the committee, once an operating plan is developed and approved, will be formally established by an Executive Order.

Members of the Committee who participated in the discussion said these would be among the major objectives: (1) to review all plans and probable effects before any new federal pesticide program is initiated; (2) to begin a review of existing chemical pesticide programs. It was agreed that state wildlife agencies would be kept fully informed on all pest control programs. It also was understood that coordination committees on state and local levels, if federal funds and programs are involved, should include fish and wildlife representation.

COMMERCIAL FISHERIES CONFERENCE: H. Con. Res. 328 (Wilson of Calif.) introduced in House June 7, a concurrent resolution requesting the President to call a national conference on commercial fishing; to the Committee on Merchant Marine and Fisheries. Such conference to be conducted by the Secretary of the Interior acting through the Bureau of Commercial Fisheries. Such conference to explore ways and means of attaining freedom from such administrative and local restrictions which ignore the economic needs of the industry; to review and evaluate governmental activities that have the obligation to be responsive to the needs of the commercial fishing industry; to explore ways and means of attaining that economical atmosphere in which commercial fishing products and processing can prosper; and to explore ways and means of developing new fishery techniques, new fishing areas, new fishery products, and new fishery markets.

COMMISSIONER OF FISH AND WILDLIFE SERVICE: On May 25 the Senate received the executive nomination of Clarence F. Pautzke, of Washington, to be Commissioner of Fish and Wildlife Service, Department of the Interior. On June 7 the Committee on Commerce, in executive session, ordered the nomination favorably reported. On June 8 the nomination was confirmed by the Senate.

GULF OF MEXICO OUTER CONTINENTAL SHELF RESTRICTIONS: On June 5 the Subcommittee on Public Lands of the House Committee on Interior and Insular Affairs held a hearing on H. R. 6745 and H. R. 6849, bills to provide for the restrictions of certain areas in the Outer Continental Shelf for defense purposes. Various private and public witnesses were heard. Hearings were also held on June 7 and June 14.

IMPORT COMPETITION ADJUSTMENT: H. R. 7186 (Lane), introduced in House on May 18 a bill to provide for adjusting conditions of competition between certain domestic industries and foreign industries with respect to the level of wages and the working conditions in the production of articles imported into the United States; to the Committee on Ways and Means. Also H. R. 7214 (Garland) and H. R. 7226 (O'Neil) on May 22; H. R. 7337 (Fenton), on May 25; H. R. 7457 (Goodling) on June 5.

INTERIOR DEPARTMENT APPROPRIATIONS FY 1962: Interior Department and Related Agencies Appropriations for 1962 (Hearings before a subcommittee of the Committee on Appropriations, United States Senate, 87th Congress, 1st Session, on H. R. 6345), 1344 pp. Includes hearings on operations of the Fish and Wildlife Service, and its two bureaus: Bureau of Commercial Fisheries and Bureau of Sport Fisheries and Wildlife. Presents the statements and testimony given by the Commissioner of Fish and Wildlife and the two Bureau Directors.

On June 2 the Senate Committee on Appropriations, in executive session, marked up and ordered favorably reported (S. Rept. 294) with amendments H. R. 6345, fiscal 1962 appropriations for the Department of the Interior, and related agencies. As approved by the committee, the bill would provide a total of $822,649,850, an increase of $69,330,850 over the House-passed figure of $753,319,000.

S. Rept. No. 294, Interior Department and Related Agencies Appropriation Bill, 1962 (June 2, a report from the Senate Committee on Appropriations, to accompany H. R. 6345), 37 pp., printed. The Senate Committee for fiscal year 1962 recommended funds for Interior Department somewhat higher than the sums included in House bill. For the Bureau of Commercial Fisheries, management and investigations of resources, the amount recommended by committee provides for all of programs set forth in the budget estimate, except that only $75,000 for pay act costs of the $96,000 reduction by House has been restored. For management and investigations of resources the appropriation for 1961 was $7,926,000 (includes $100,000 in the 2d Supplemental Appropriation Act, 1961, and $1 million for salmon research in the 3d Supplemental Appropriation Act, 1961); budget estimate, 1962 $11,796,000 (reflects transfer in the estimates of $1,915,000 from "operations and maintenance, general, Corps of Engineers," for the Columbia River fishery facilities and includes budget amendment increase of $2,500,000 in H. Doc. 113); House allowance, $11,700,000; and the Senate Committee recommendation, $12,225,000. The increase of $525,000 by the committee includes (1) research to improve efficiency of blue crab plant operations, $100,000; (2) research on shrimp resources in Gulf of Mexico, $175,000; (3) time-temperature tolerance study on frozen fish and shellfish, $30,000; (4) investigations into effect control techniques have on shellfish $30,000; (5) research on manufacture and use of fish protein concentrate (fish flour) $50,000; fishery research program for rice areas, $65,000; pay act cost $75,000. Committee concurred with House allowance of $300,000 for purchase of foreign currencies to be used for research contracts in foreign areas, with a change in language of the bill, which the Committee believes will permit the Bureau to enter into research contracts in an amount not to exceed $700,000 which will require longer than 1 year to complete, and at the same time will provide Congress with an opportunity to review contracts each year. The Committee concurred in House allowance of construction as set forth in budget estimate, $7,561,000; subsidy payments for fishing vessels constructed in U. S. shipyards, $750,000; general administrative expenses, $482,000; administration of Pribilof Islands, $1,981,000; provision authorizing use of funds available in fisheries loan fund for necessary expenses in administering the program, $250,000.

For the Bureau of Sport Fisheries and Wildlife--the appropriation for 1961 was $19,308,000; budget estimate, 1962 was $23,300,000; House allowed $23,000,000; Senate committee recommendation was

$23,972,000. Increase included funds for a cooperative wildlife research unit, research on reservoir fish productivity, study of methods of eliminating undesirable fish from streams and lakes, establishment of a cooperative sport fisheries research unit, and for additional law-enforcement positions. For construction, the budget estimate for 1962 was $4,067,000; House allowance $3,770,000; Senate Committee increased the amount to $5,350,650 for numerous improvements at fish hatcheries and wildlife refuges, completion of facilities, etc. For general administrative expenses, the Committee approved the full amount of budget estimate, $1,071,000; House allowance was $1,016,000 the same as 1961 appropriations.

For the Office of the Commissioner of Fish and Wildlife, the Committee approved $364,000, the same as the amount allowed by the House, the budget estimate, and the 1961 appropriation.

On June 6 the Senate considered H. R. 6345, adopted all committee amendments en bloc, which were thereafter considered as original text for purpose of further amendment; Hayden amendment of a technical corrective nature respecting Columbia River fish sanctuary program; and Case (S. Dak.) amendment increasing funds for National Park Service. Votes on further amendments were deferred.

On June 7 the Senate passed H. R. 6345.

KING AND SILVER SALMON ADVISORY COMMITTEE: H. R. 7595 (Clem Miller), introduced in House June 12, a bill to establish an Advisory Committee on King and Silver Salmon, and for other purposes; to the Committee on Merchant Marine and Fisheries.

MARINE MAMMAL HIGH SEAS PROTECTION: On June 1 the House Committee on Merchant Marine and Fisheries, subcommittee on Wildlife Conservation and Fisheries met in executive session and ordered reported favorably to the full committee H. R. 777 (amended), for protection of marine mammals on the high seas. Identical bill, H. R. 7490 (Saylor), introduced in House June 6, to Committee on Merchant Marine and Fisheries.

METRIC SYSTEM STUDY: S. 2030 (Neuberger), introduced in Senate on June 7, a bill to provide that the Secretary of Commerce shall conduct a study to determine the desirability and practicability of the adoption by the United States of the metric system of weights and measures; to the Committee on Commerce.

NATIONAL SCIENCE ACADEMY: On May 23 and 24 the House Committee on Science and Astronautics, Subcommittee No. 3, held a hearing on H. R. 1, a bill to provide for the establishment, under the National Science Foundation, of a National Science Academy. Various public witnesses were heard.

NATURAL RESOURCES CONSERVATION: Resources and Conservation Act of 1961 (Hearings before the Senate Committee on Interior and Insular Affairs, 87th Congress, 1st Session, April 13, 1961, to accompany S. 239 and S. 1415, bills to declare a national policy on conservation, development, and utilization of natural resources, and for other purposes), 174 pp., printed. Contains text of, and reports on each bill; statements of U. S. Congressmen, officials of various wildlife and natural resources organizations; letters, resolutions, and other communications from various public and private individuals, as well as the major U. S. Government agencies.

OCEANOGRAPHIC FUNDS FOR NATIONAL SCIENCE FOUNDATION: Independent Offices Appropriations for 1962--Part 2 (Hearings before the Subcommittee of the Committee on Appropriations, House of Representatives, 87th Congress, 1st Session), 1353 pp., printed. Among others, includes appropriations for the National Science Foundation. A portion of the funds ($8,500,000) for the foundation is allocated for oceanographic research vessels and shore facilities. The Foundation will build two 195-foot steam-powered vessels, and shoreside facilities for both physical and biological programs--a place where the oceanographic ships can be serviced and where research equipment can be taken care of.

OCEANOGRAPHIC RESEARCH PROGRAM: Marine Science (Hearings before the Committee on Interstate and Foreign Commerce, United States Senate, 87th Congress, 1st Session on S. 901 and S. 1189, bills to advance the marine sciences, March 15, 16, 17, and May 2, 1961), 209 pp., printed. Primary purpose of legislation is to enhance the national economy, security, and welfare by increasing our knowledge of the oceans, and the Great Lakes in all pertinent scientific fields, such as physics, biology, chemistry, meteorology, and geology. Contains text of both bills, statements and testimony of various oceanographers, marine biologists, government officials, and members of various fisheries commissions and associations.

On May 23 the full Senate Committee on Commerce met on S. 901, a bill to establish a 10-year program of oceanographic research and surveys. Bill was ordered favorably reported with amendments.

On June 5 the House passed H. R. 6845, a bill to amend title 14 of the United States Code to provide for an expansion of the functions of the Coast Guard. Amendment is insertion of the words "shall engage in oceanographic research on the high seas and in waters subject to the jurisdiction of the United States;" before the last clause of this section which reads "and shall maintain a state of readiness to function as a specialized service in the Navy in time of war." A motion to reconsider was laid on the table. Bill sent to the Senate without amendment.

On June 6 the Senate Committee on Commerce submitted a report to the Senate on S. 1189, a bill to amend title 14 of the United States Code in order to authorize the Coast Guard to carry on certain oceanographic research (S. Rept. No. 295). Also, Senate received message from House announcing passage of H. R. 6845, an identical bill, and requesting concurrence of Senate.

S. Rept. No. 295 Coast Guard Oceanographic Research (87th Congress, 1st Session, June 6, 1961, report from the Committee on Commerce to accompany S. 1189), 5 pp., printed. Contains the amendment to United States Code relating to the Coast Guard, purpose of the bill, committee action, agency comments, and changes in existing law. Would enable the U. S. Coast Guard to conduct oceanographic research, either independently or in cooperation with other Government agencies, and thereby free the Coast Guard from statutory restrictions that limit its scientific marine studies to the Ice Patrol.

On June 12 the Senate passed H. R. 6845 with amendment, substituting the language in S. 1189. The House bill did not use language which would allow the Coast Guard to have as one of its primary duties engaging in oceanographic research on the high seas. Bill was referred back to House.

The subcommittee on Oceanography, of the House Committee on Merchant Marine and Fisheries held hearings June 19-23, on H. R. 4276, a bill to expand and develop the aquatic resources of the United States.

OYSTER PRODUCERS LOANS: H. R. 7336 (Downing), introduced in the House May 25, a bill to authorize the Secretary of the Interior to make loans to certain producers of oysters, and for other purposes; to the Committee on Merchant Marine and Fisheries.

SALTONSTALL-KENNEDY ANNUAL REPORT: On June 5 the House received executive communication 982, a letter from the Under Secretary of the Interior, transmitting the fifth annual report of operations conducted by or under contract with the Bureau of Commercial Fisheries of the Department of the Interior to encourage the distribution of domestically produced fishery products, pursuant to 70 Stat. 1119; to Committee on Merchant Marine and Fisheries. On June 7, the Senate received similar report.

On June 15, 1961, Subcommittee on Merchant Marine and Fisheries of the Senate Committee on Commerce held hearings on S. 1230, to establish an additional fund for fisheries research programs. Testimony was received from Senators, Government officials, organizations, state officials, and others.

SCIENTIFIC RESEARCH AND DEVELOPMENT REPORT: On May 18 the Committee on Government Operations submitted a report to the Senate entitled: "Coordination of Information on Current Scientific Research and Development Supported by the U. S. Government--Administrative and Scientific Problems and Opportunities of Central Registration of Research Projects in Science and Engineering," (S. Rept. No. 263).

S. Rept. No. 263, Coordination of Information on Current Scientific Research and Development Supported by the United States Government--Administrative and Scientific Problems and Opportunities of Central Registration of Research Projects in Science and Engineering (May 18, 1961, report prepared for Committee on Government Operations, United States Senate, and its Subcommittee on Reorganization and International Organizations, pursuant to S. Res. 255, Sections 1-4, 86th Congress), 300 pp., printed. Contains 13 sections, 9 appendixes, findings and recommendations, index, 18 tables, and 13 figures. The report points out that a "revolution" in the science of information storage and retrieval has occurred. This report explores the question, "Has this revolution, as it affects the management of data on research still in process, been capitalized upon by Federal agencies for purposes of planning and administering science programs?" The Committee takes a look at what happens (or may not happen) during the long chain of events which precede the publication of scientific research results, and points out that the management of information during this prepublication stage is of vital significance. The study which makes up the report was developed in three phases: (1) A consultative analysis of the general problem of Federal coordination on prepublication research (comprising the bulk of the report). (2) A consultative analysis of a specialized case history of information on current Federal research (to be issued separately). (3) Continued review of certain phases of both the general and specialized areas by the subcommittee's own project director, so as to assist and complement the consultative analyses.

SHELLFISHERIES RESEARCH CENTER: On June 7 the Senate Committee on Commerce ordered favorably reported S. 606, a bill providing for the construction of a shellfisheries research center at Milford, Conn.

S. Rept. No. 354, Shellfisheries Research Center at Milford, Conn. (87th Congress, 1st Session, June 7, 1961, report from Committee on Commerce, to accompany S. 606), 3 pp., printed. Contains purpose of bill, costs, and report from the Department of Interior. Would authorize the Secretary of the Interior to construct a research center for shellfisheries production at Milford, Conn., and to acquire such real property as may be necessary. Research center is to consist of research facilities, a pilot hatchery and a training school, and shall be used for the conduct of basic research on the physiology and ecology of commercial shellfish, development of hatchery methods for cultivation of mollusks, and to train persons in the most advance methods of shellfish culture.

On June 12 the Senate passed without amendment and cleared for House S. 606. Authorizes up to $1,325,000.

SHRIMP IMPORT DUTIES: On June 2 a concurrent resolution of the Legislature of the State of Louisiana, was received in the Senate, to urge the U. S. Congress to adopt S. 1571 and H. R. 6212 which would amend the Tariff Act of 1930 to impose a duty on shrimp and provide for duty-free entry of unprocessed shrimp annually in an amount equal to imports of shrimp in 1960; to Committee on Finance.

On June 8 a resolution of the State of Florida was presented to the Senate and the House, memorializing and petitioning the Congress and the Departments of the executive branch of the Federal Government to exert their best efforts to bring about a measure of stability to the domestic shrimp market by a regulation of imports of shrimp so that the domestic shrimp industry may survive and prosper, giving employment to Americans, utilizing fully this valuable natural resource, and preserving and maintaining the individual and independent seamen and producers who wrest their living dangerously from the sea; to Committee on Finance.

STATE DEPARTMENT APPROPRIATIONS FY 1962: Departments of State and Justice, the Judiciary, and Related Agencies Appropriations for 1962 (Hearings before the Subcommittee of the House Committee on Appropriations, House of Representatives, 87th Congress, 1st Session), 1336 pp., printed. State Department appropriations include funds for the international fisheries commissions in the amount of $1,959,000 (estimated). The projects or functions include the International Pacific Halibut Commission, International Pacific Salmon Fisheries Commission, Inter-American Tropical Tuna Commission, International Commission for the Northwest Atlantic Fisheries, International Whaling Commission, International North Pacific Fisheries Commission, Great Lakes Fishery Commission, North Pacific Fur Seal Commission, Tortugas Shrimp Commission, and expenses of the United States Commissioners. Gives the statutory authorization, a general statement, background, accomplishments of fiscal year 1960, program for fiscal years 1961 and 1962, explanations of increases, and basis for estimates for each organization.

H. R. 7371 (Rooney), introduced from Committee on Appropriations on May 29, a bill making appropriations for Departments of State and Justice, the Judiciary, and related agencies for the fiscal year ending June 30, 1962,

and for other purposes. Contains $1,896,000 for International Fisheries Commissions, pursuant to treaties or conventions and implementing acts of Congress (H. Rept. No. 442). On June 1 the House passed H. R. 7371 by a record vote of 256 yeas to 71 nays, without amendment.

On June 2 H. R. 7371, was received in the Senate, read twice and referred to the Committee on Appropriations.

On June 16, the subcommittee of the Senate Committee on Appropriations continued its hearings on H. R. 7371.

SUBMERGED LANDS ACT: On June 16 a joint resolution of the Senate and Assembly of the State of California was received in the Senate, urging the Congress of the United States to enact H. R. 4390 into law. This legislation would establish and confirm the seaward boundaries of all coastal States to a line extending three marine leagues (nine geographical or 10½ statute miles) from the coastline.

VESSEL MEASUREMENT: On May 18 the Senate and House received a letter from the Secretary of the Treasury, transmitting a draft of proposed legislation to simplify the admeasurement of small vessels (with accompanying papers); to the Committee on Commerce.

S. 1936 (Magnuson), introduced in Senate May 22, a bill to simplify the admeasurement of small vessels; to Committee on Commerce. Purpose of bill is to substitute for present complicated method of tonnage measurement a new system which would permit the assignment of tonnages from a table on the basis of length and breadth only. The tonnage would be limited to self-propelled vessels of less than 500 gross tons and non-self-propelled vessels of not more than 997 gross tons.

WATER POLLUTION CONTROL: (Hearings before a Subcommittee of the Committee on Public Works, United States Senate, 87th Congress, 1st Session on S. 45, S. 120, S. 325, S. 571, S. 861, S. 1475, and H. R. 6441, amending the Federal Water Pollution Control Act to provide for a more effective program of water pollution control, May 8 and 9, 1961), 233 pp., printed. Contains text of each bill; statements from government and private individuals; and exhibits consisting of letters, news articles, maps, and graphs.

On May 31 the Senate Committee on Public Works ordered favorably reported S. 120, a bill to amend the Federal Water Pollution Control Act so as to provide a more effective program of water pollution control. (S. Rept. 353).

S. Rept. 353, Federal Water Pollution Control Act Amendments of 1961 (87th Congress, 1st Session, June 7, 1961, report from Committee on Public Works, to accompany S. 120), 24 pp., printed. Contains a general statement, discussion, major provisions of bill, changes in existing bill, a text of the act, and tables. Purpose of legislation, as amended, is to extend the authorization for grants to States and interstate agencies to assist them in meeting the costs of establishing and maintaining adequate measures for the prevention and control of water pollution.

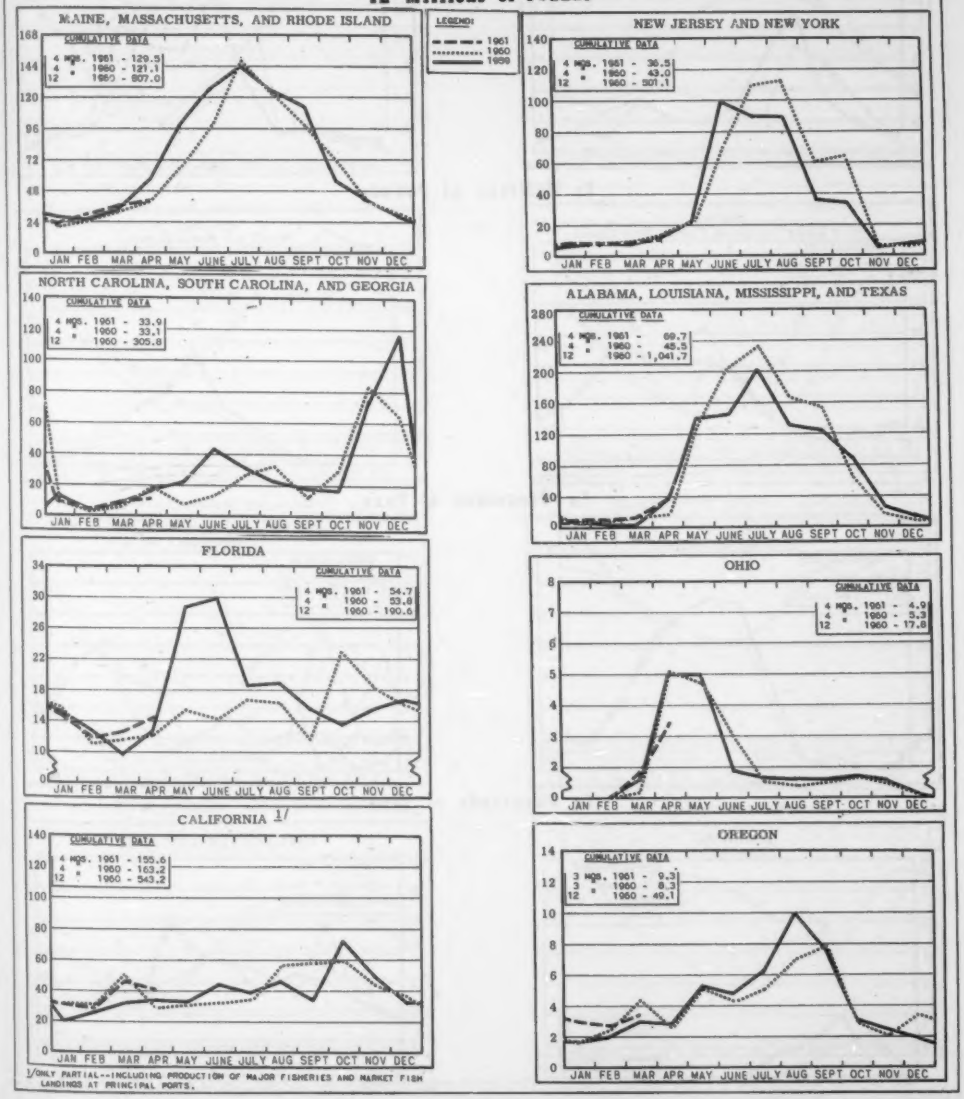
COOKIES MADE WITH FISH FLOUR SERVED AT LUNCHEON

Toll house cookies containing 5 percent by weight of so-called "fish flour" were served to approximately 200 guests at a general luncheon held during the meeting of the Virginia Fisheries Association early in 1959. The use of the fish flour was experimental. It had been prepared approximately six months prior to the test and had not been stabilized to prevent onset of rancidity. The general acceptance of the cookies by the persons attending the luncheon attested to the fact that the flour had undergone no noticeable deterioration during storage. The flour was prepared from menhaden. Proximate analysis of the dry product was as follows: protein, 96.1 percent; ash, 4.8 percent; and oil, 0.08 percent. When normally packaged, the product picks up about 12 percent moisture with corresponding decreases in protein and ash.

However, several serious problems must be solved prior to commercial production of fish flour.

CHART 1 - FISHERY LANDINGS for SELECTED STATES

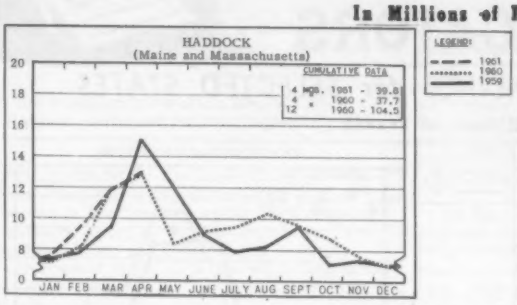
In Millions of Pounds

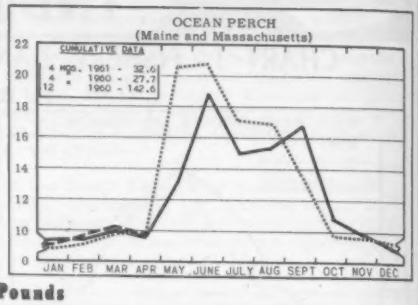

MAINE, MASSACHUSETTS, AND RHODE ISLAND
CUMULATIVE DATA
4 MOS. 1961 - 129.5
4 " 1960 - 121.1
12 " 1960 - 807.0
LEGEND:
1961
1960
1959
NEW JERSEY AND NEW YORK
CUMULATIVE DATA
4 MOS. 1961 - 36.5
4 " 1960 - 43.0
12 " 1960 - 301.1
NORTH CAROLINA, SOUTH CAROLINA, AND GEORGIA
CUMULATIVE DATA
4 MOS. 1961 - 33.9
4 " 1960 - 33.1
12 " 1960 - 305.8
ALABAMA, LOUISIANA, MISSISSIPPI, AND TEXAS
CUMULATIVE DATA
4 MOS. 1961 - 69.7
4 " 1960 - 45.5
12 " 1960 - 1,041.7
FLORIDA
CUMULATIVE DATA
4 MOS. 1961 - 54.7
4 " 1960 - 53.8
12 " 1960 - 190.6
OHIO
CUMULATIVE DATA
4 MOS. 1961 - 4.9
4 " 1960 - 5.3
12 " 1960 - 17.8
CALIFORNIA 1/
CUMULATIVE DATA
4 MOS. 1961 - 155.6
4 " 1960 - 163.2
12 " 1960 - 543.2
OREGON
CUMULATIVE DATA
3 MOS. 1961 - 9.3
3 " 1960 - 8.3
12 " 1960 - 49.1
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

1/ONLY PARTIAL--INCLUDING PRODUCTION OF MAJOR FISHERIES AND MARKET FISH LANDINGS AT PRINCIPAL PORTS.

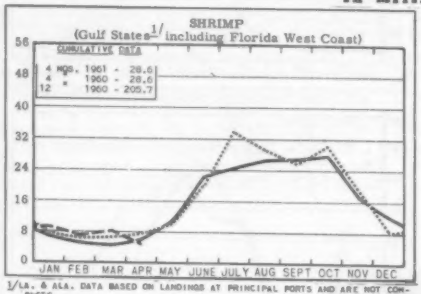
CHART 2 - LANDINGS for SELECTED FISHERIES

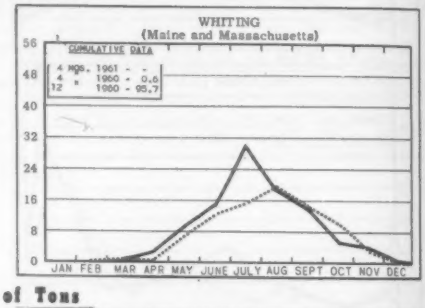
In Millions of Pounds




OCEAN PERCH
(Maine and Massachusetts)
CUMULATIVE DATA
4 MOS. 1961 - 32.6
4 " 1960 - 27.7
12 " 1960 - 142.6
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

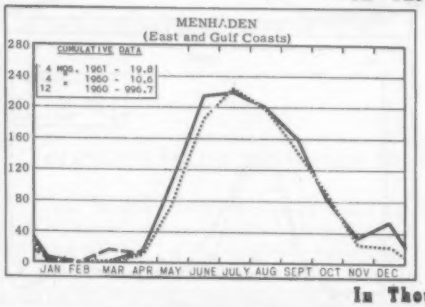
In Millions of Pounds

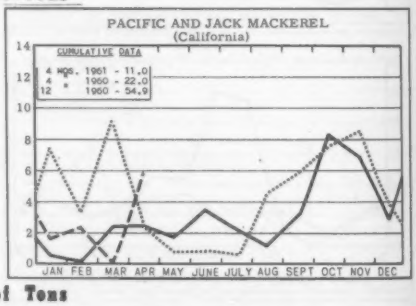

SHRIMP
(Gulf States 1/ including Florida West Coast)
CUMULATIVE DATA
4 MOS. 1961 - 28.6
4 " 1960 - 28.6
12 " 1960 - 205.7
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC


WHITING
(Maine and Massachusetts)
CUMULATIVE DATA
4 MOS. 1961 - -
4 " 1960 - 0.6
12 " 1960 - 95.7
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

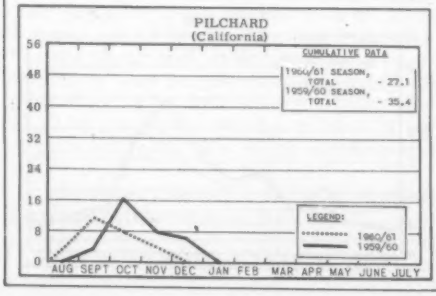
1/ LA. & ALA. DATA BASED ON LANDINGS AT PRINCIPAL PORTS AND ARE NOT COMPLETE.

In Thousands of Tons


MENHADEN
(East and Gulf Coasts)
CUMULATIVE DATA
4 MOS. 1961 - 19.8
4 " 1960 - 10.6
12 " 1960 - 996.7
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC


PACIFIC AND JACK MACKEREL
(California)
CUMULATIVE DATA
4 MOS. 1961 - 11.0
4 " 1960 - 22.0
12 " 1960 - 54.9
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

In Thousands of Tons



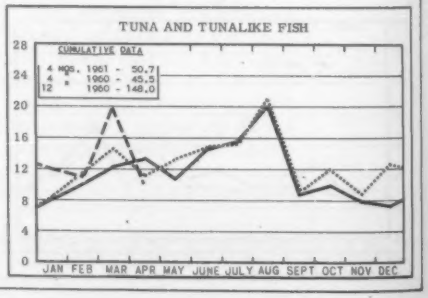
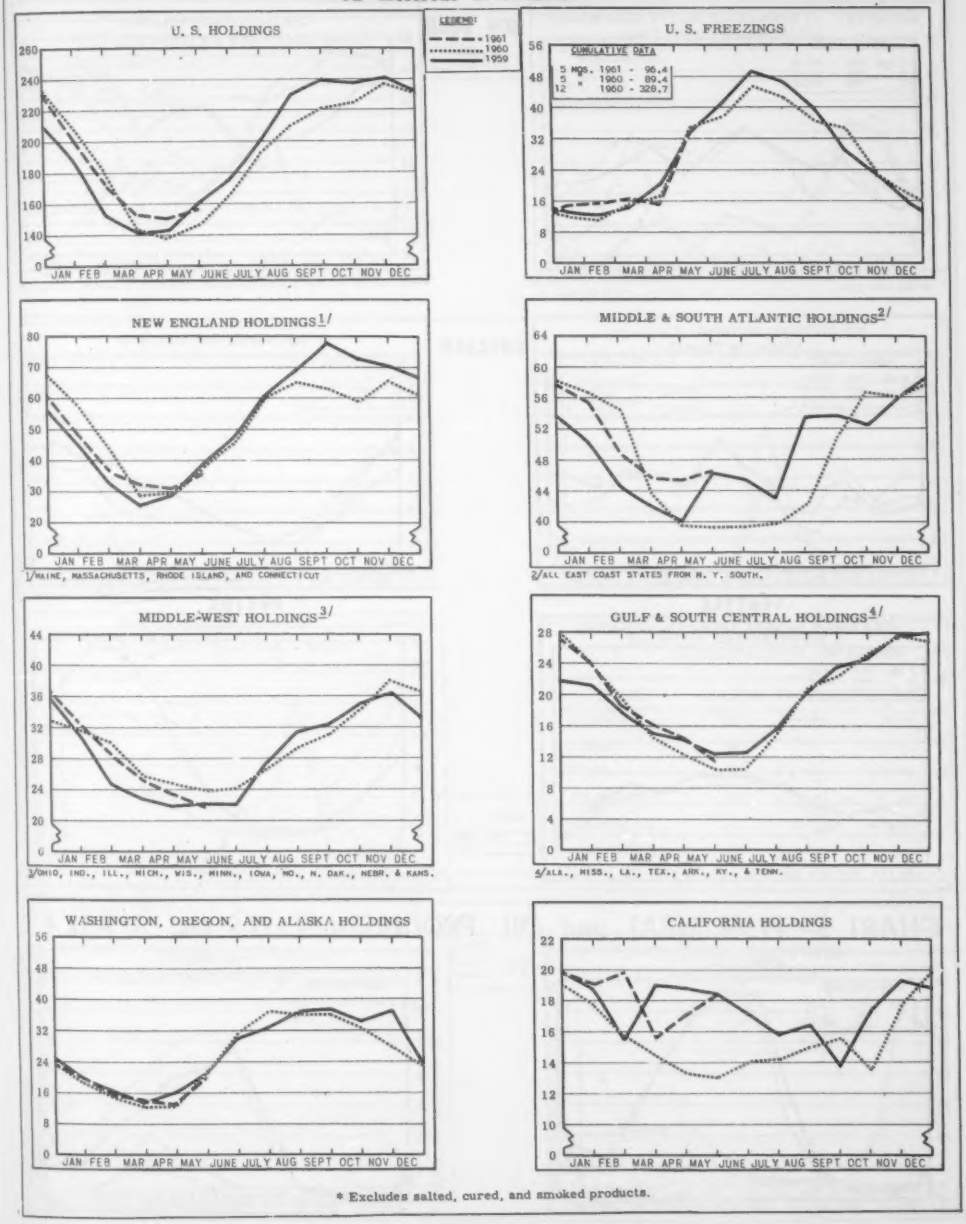

TUNA AND TUNALIKE FISH
CUMULATIVE DATA
4 MOS. 1961 - 50.7
4 " 1960 - 45.5
12 " 1960 - 148.0
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

CHART 3 - COLD-STORAGE HOLDINGS and FREEZINGS of FISHERY PRODUCTS *

In Millions of Pounds


U. S. HOLDINGS
LEGEND:
1961
1960
1959
U. S. FREEZINGS
CUMULATIVE DATA
5 MOS. 1961 - 98.4
5 " 1960 - 89.4
12 " 1960 - 328.7
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC
NEW ENGLAND HOLDINGS 1/
1/MAINE, MASSACHUSETTS, RHODE ISLAND, AND CONNECTICUT
MIDDLE & SOUTH ATLANTIC HOLDINGS 2/
2/ALL EAST COAST STATES FROM N. Y. SOUTH.
MIDDLE-WEST HOLDINGS 3/
3/OHIO, IND., ILL., MICH., WIS., MINN., IOWA, MO., N. DAK., NEBR. & KANS.
GULF & SOUTH CENTRAL HOLDINGS 4/
4/ALA., MISS., LA., TEX., ARK., KY., & TENN.
WASHINGTON, OREGON, AND ALASKA HOLDINGS
CALIFORNIA HOLDINGS

* Excludes salted, cured, and smoked products.

CHART 4 - RECEIPTS and COLD-STORAGE HOLDINGS of FISHERY PRODUCTS at PRINCIPAL DISTRIBUTION CENTERS

In Millions of Pounds

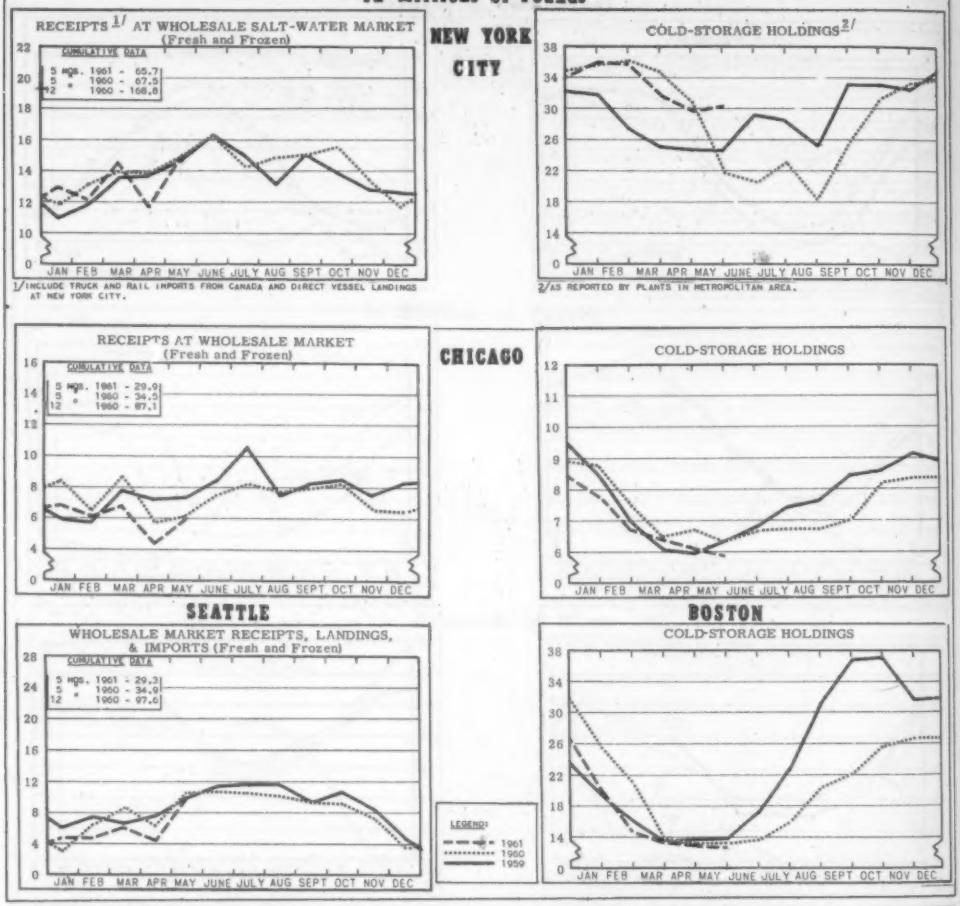

NEW YORK CITY
RECEIPTS 1/ AT WHOLESALE SALT-WATER MARKET (Fresh and Frozen)
CUMULATIVE DATA
5 MOS. 1961 - 65.7
5 " 1960 - 67.5
12 " 1960 - 168.8
COLD-STORAGE HOLDINGS 2/
1/INCLUDE TRUCK AND RAIL IMPORTS FROM CANADA AND DIRECT VESSEL LANDINGS AT NEW YORK CITY.
2/AS REPORTED BY PLANTS IN METROPOLITAN AREA.
CHICAGO
RECEIPTS AT WHOLESALE MARKET (Fresh and Frozen)
CUMULATIVE DATA
5 MOS. 1961 - 29.0
5 " 1960 - 34.5
12 " 1960 - 97.1
COLD-STORAGE HOLDINGS
SEATTLE
WHOLESALE MARKET RECEIPTS, LANDINGS, & IMPORTS (Fresh and Frozen)
CUMULATIVE DATA
5 MOS. 1961 - 29.3
5 " 1960 - 34.9
12 " 1960 - 97.6
BOSTON
COLD-STORAGE HOLDINGS
LEGEND:
1961
1960
1959
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

CHART 5 - FISH MEAL and OIL PRODUCTION - U.S and ALASKA

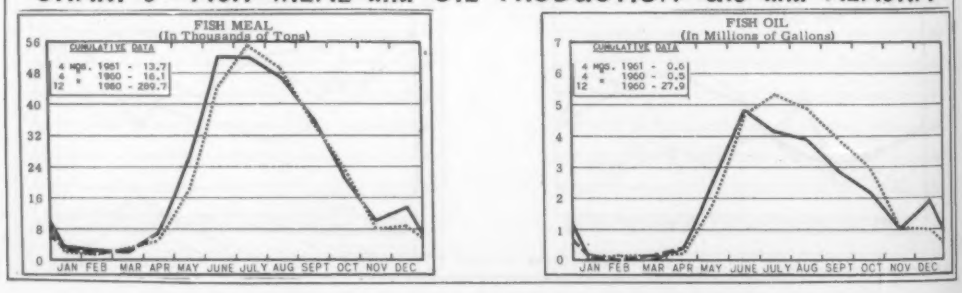
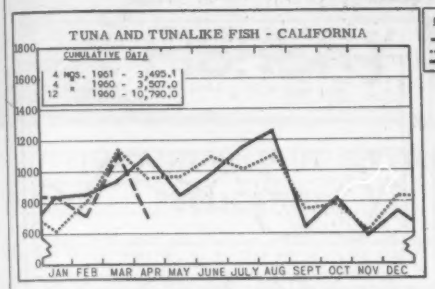
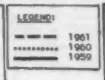
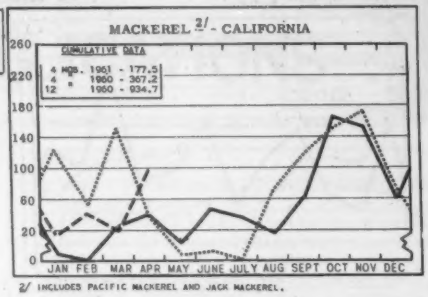

FISH MEAL
(In Thousands of Tons)
CUMULATIVE DATA
4 MOS. 1961 - 13.7
4 " 1960 - 16.1
12 " 1960 - 289.7
FISH OIL
(In Millions of Gallons)
CUMULATIVE DATA
4 MOS. 1961 - 0.6
4 " 1960 - 0.5
12 " 1960 - 27.9
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

CHART 6 - CANNED PACKS of SELECTED FISHERY PRODUCTS

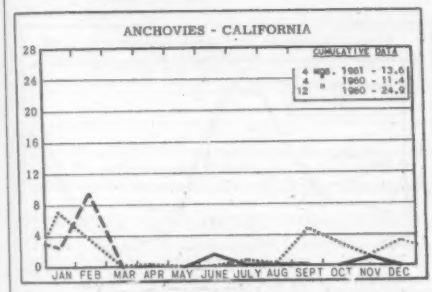
In Thousands of Standard Cases

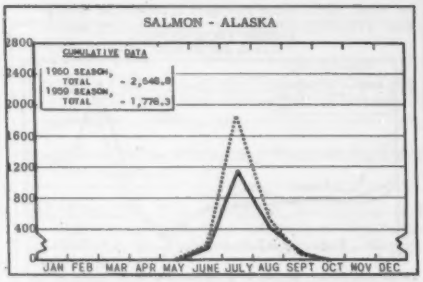

TUNA AND TUNALIKE FISH - CALIFORNIA
CUMULATIVE DATA
4 MOS. 1961 - 3,495.1
4 " 1960 - 3,507.0
12 " 1960 - 10,790.0
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

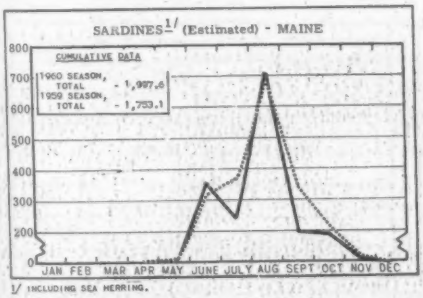



MACKEREL 2/ - CALIFORNIA
CUMULATIVE DATA
4 MOS. 1961 - 177.5
4 " 1960 - 367.2
12 " 1960 - 934.7
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

2/ INCLUDES PACIFIC MACKEREL AND JACK MACKEREL.


ANCHOVIES - CALIFORNIA
CUMULATIVE DATA
4 MOS. 1961 - 13.6
4 " 1960 - 11.4
12 " 1960 - 24.9
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

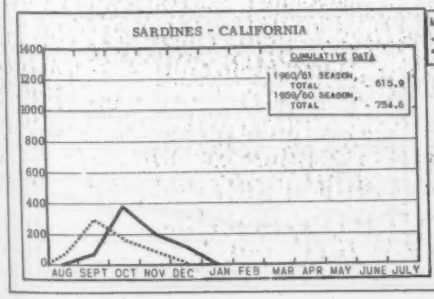

SALMON - ALASKA
CUMULATIVE DATA
1960 SEASON, TOTAL - 2,648.8
1959 SEASON, TOTAL - 1,778.3
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

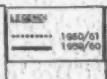

SARDINES 1/ (Estimated) - MAINE
CUMULATIVE DATA
1960 SEASON, TOTAL - 1,997.6
1959 SEASON, TOTAL - 1,753.1
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

1/ INCLUDING SEA HERRING.

STANDARD CASES

Variety	No. Cans	Designation	Net Wgt.
SARDINES.....	100	¼ drawn	3¾ oz.
SHRIMP.....	48	"	5 oz.
TUNA.....	48	# ½ tuna	6 & 7 oz.
PILCHARDS...	48	# 1 oval	15 oz.
SALMON.....	48	1-lb. tall	16 oz.
ANCHOVIES...	48	½-lb.	8 oz.


SARDINES - CALIFORNIA
CUMULATIVE DATA
1960/61 SEASON, TOTAL - 615.9
1959/60 SEASON, TOTAL - 754.6
AUG SEPT OCT NOV DEC JAN FEB MAR APR MAY JUNE JULY



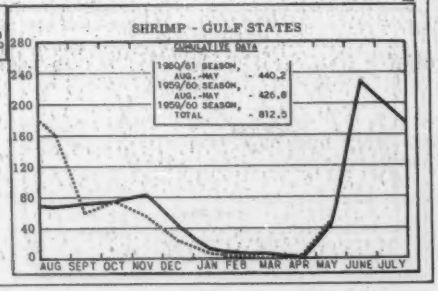
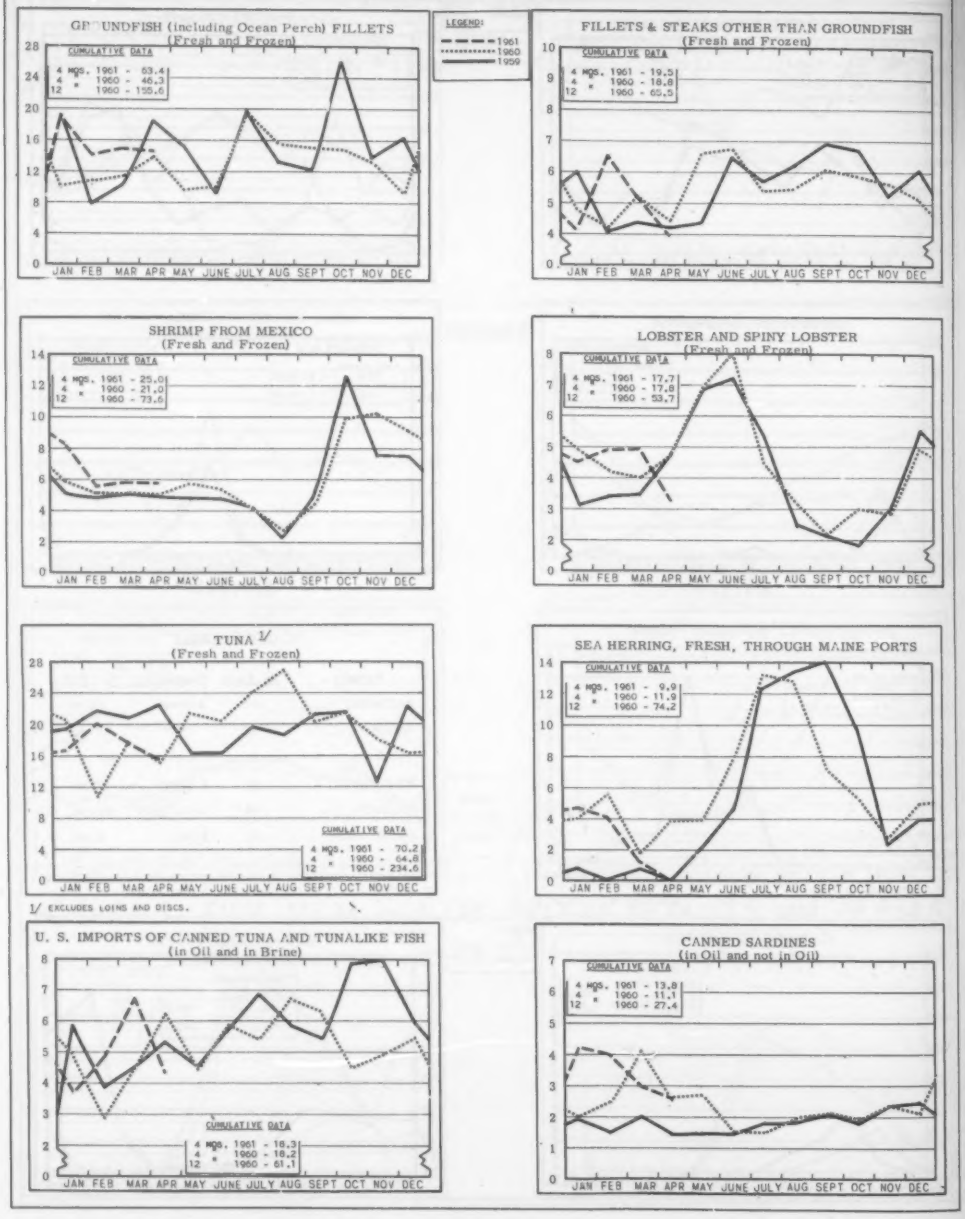
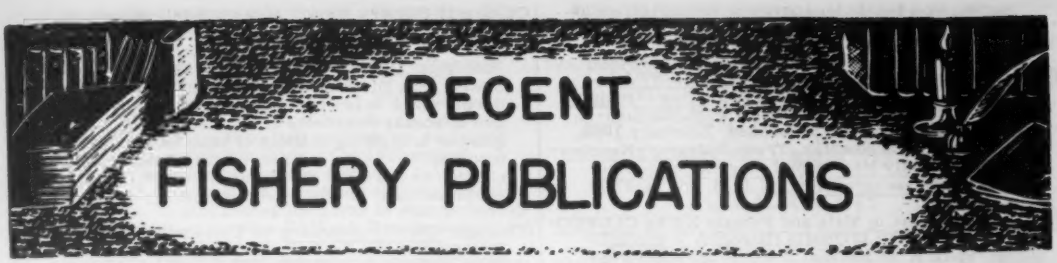

SHRIMP - GULF STATES
CUMULATIVE DATA
1960/61 SEASON, AUG.-MAY - 440.2
1959/60 SEASON, AUG.-MAY - 426.0
1959/60 SEASON, TOTAL - 812.5
AUG SEPT OCT NOV DEC JAN FEB MAR APR MAY JUNE JULY

CHART 7 - U.S. FISHERY PRODUCTS IMPORTS

In Millions of Pounds


GROUNDFISH (including Ocean Perch) FILLETS
(Fresh and Frozen)
CUMULATIVE DATA
4 MOS. 1961 - 63.4
4 " 1960 - 46.3
12 " 1960 - 155.6
LEGEND:
1961
1960
1959
FILLETS & STEAKS OTHER THAN GROUNDFISH
(Fresh and Frozen)
CUMULATIVE DATA
4 MOS. 1961 - 19.5
4 " 1960 - 18.8
12 " 1960 - 65.5
SHRIMP FROM MEXICO
(Fresh and Frozen)
CUMULATIVE DATA
4 MOS. 1961 - 25.0
4 " 1960 - 21.0
12 " 1960 - 73.6
LOBSTER AND SPINY LOBSTER
(Fresh and Frozen)
CUMULATIVE DATA
4 MOS. 1961 - 17.7
4 " 1960 - 17.6
12 " 1960 - 53.7
TUNA 1/
(Fresh and Frozen)
CUMULATIVE DATA
4 MOS. 1961 - 70.2
4 " 1960 - 64.8
12 " 1960 - 234.6
SEA HERRING, FRESH, THROUGH MAINE PORTS
CUMULATIVE DATA
4 MOS. 1961 - 9.9
4 " 1960 - 11.9
12 " 1960 - 74.2
U. S. IMPORTS OF CANNED TUNA AND TUNALIKE FISH
(in Oil and in Brine)
CUMULATIVE DATA
4 MOS. 1961 - 16.3
4 " 1960 - 18.2
12 " 1960 - 61.1
CANNED SARDINES
(in Oil and not in Oil)
CUMULATIVE DATA
4 MOS. 1961 - 13.8
4 " 1960 - 11.1
12 " 1960 - 27.4
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

1/ EXCLUDES LOINS AND DISCS.



FISH AND WILDLIFE SERVICE PUBLICATIONS

THESE PROCESSED PUBLICATIONS ARE AVAILABLE FREE FROM THE DIVISION OF INFORMATION, U. S. FISH AND WILDLIFE SERVICE, WASHINGTON 25, D. C. TYPES OF PUBLICATIONS ARE DESIGNATED AS FOLLOWS:

CFS - CURRENT FISHERY STATISTICS OF THE UNITED STATES.
FL - FISHERY LEAFLETS.
SL - BRANCH OF STATISTICS LISTS OF DEALERS IN AND PRODUCERS OF FISHERY PRODUCTS AND BYPRODUCTS.
MNL - REPRINTS OF REPORTS ON FOREIGN FISHERIES.
SSR - FISH - SPECIAL SCIENTIFIC REPORTS--FISHERIES (LIMITED DISTRIBUTION).
SEP. - SEPARATES (REPRINTS) FROM COMMERCIAL FISHERIES REVIEW.

Number Title

CFS-2538 - California Landings, December 1960, 5 pp.
CFS-2539 - Wisconsin Landings, January 1961, 2 pp.
CFS-2545 - Massachusetts Landings, December 1960, 6 pp.
CFS-2549 - Georgia Landings, February 1961, 2 pp.
CFS-2552 - Frozen Fish Report, March 1961, 8 pp.
CFS-2553 - Fish Meal and Oil, February 1961, 2 pp.
CFS-2554 - Rhode Island Landings, 1960 Annual Summary, 8 pp.
CFS-2555 - Shrimp Landings, December 1960, 6 pp.
CFS-2556 - New Jersey Landings, February 1961, 3 pp.
CFS-2558 - Wisconsin Landings, February 1961, 2 pp.
CFS-2560 - Maine Landings, February 1961, 3 pp.
CFS-2561 - Rhode Island Landings, February 1961, 3 pp.
CFS-2562 - Michigan Landings, February 1961, 2 pp.
CFS-2563 - Mississippi Landings, January 1961, 2 pp.
CFS-2564 - New York Landings, February 1961, 4 pp.
CFS-2565 - Minnesota Landings, January and February 1961, 2 pp.
CFS-2567 - Virginia Landings, February 1961, 3 pp.
CFS-2568 - Maine Landings, 1960 Annual Summary, 6 pp.
CFS-2570 - Texas Landings, January 1961, 3 pp.
CFS-2571 - Fish Sticks and Portions, January-March 1961, 3 pp.
CFS-2574 - Oregon Landings, 1960 Annual Summary, 2 pp.
CFS-2575 - California Landings, January 1961, 4 pp.
CFS-2576 - Mississippi Landings, February 1961, 2 pp.
CFS-2577 - North Carolina Landings, March 1961, 4 pp.
CFS-2579 - South Carolina Landings, March 1961, 2 pp.
CFS-2580 - Georgia Landings, March 1961, 2 pp.
CFS-2581 - Fish Meal and Oil, March 1961, 2 pp.
CFS-2587 - Ohio Landings, March 1961, 2 pp.
CFS-2589 - Alabama Landings, January 1961, 2 pp.

FL-147 (Revised January 1961) - List of National Fish Hatcheries, 10 pp., processed.

FL-993 - Fisheries of the United States, 1960 (A Preliminary Review), by E. A. Power, 70 pp., illus., revised April 1961. A preliminary review of commercial fishery activities, well illustrated with graphs and charts. In addition to data on production, consumption, prices, manufactured fishery products, value of industry and capital investments, and supplies of certain fishery products, this leaflet contains information on fishery imports and exports, and world fisheries.

SL- 50 - Partial List of Wholesale Dealers in Fishery Products in Inland Cities with a Population of 50,000 and Over, 1959.

SL-162 - Firms Producing Fish Sticks and Portions, 1961 (Revised).

SSR-Fish. No. 372 - Relative Abundance of Plankton off Naples, Florida, and Associated Hydrographic Data, 1956-57, by Alexander Dragovich, 43 pp., illus., January 1961.

SSR-Fish. No. 374 - Zooplankton Volumes Off the Pacific Coast, 1958, by James R. Thrailkill, 72 pp., illus., January 1961.

Sep. No. 620 - Bottom Trawling Explorations off the Washington and British Columbia Coasts, May-August 1960.

Sep. No. 621 - Indexes of the Cost of Transportation for Fishery Products.

Fisheries Loan Fund, Fiscal Year 1958, Fish and Wildlife Circular 106, 7 pp., illus., processed. Covers the statistics of the fisheries, a review of the loan fund program, organization of the Office of Loans and Grants, status of the loan fund, and practical value of the program. Includes graphs showing number of loan applications, value of applications, and other similar data.

THE FOLLOWING MARKET NEWS LEAFLETS ARE AVAILABLE FROM THE BRANCH OF MARKET NEWS, BUREAU OF COMMERCIAL FISHERIES, U. S. FISH AND WILDLIFE SERVICE, WASHINGTON 25, D. C.

Number Title

MNL-50 - Preliminary Estimate of Commercial Fish Production, Province of Ontario, Canada, 1960.
MNL-51 - Turkish Fisheries in the Marmara Area.

THE FOLLOWING ENGLISH TRANSLATIONS OF FOREIGN LANGUAGE ARTICLES ARE AVAILABLE FROM THE U. S. FISH AND WILDLIFE SERVICE, BIOLOGICAL LABORATORY, BOOTHBAY HARBOR, ME.

Biological Groups of Murman Herring (CLUPEA HARENGUS HARENGUS) according to the Structure of Winter Rings on the Scales, by P. A. Murashkintseva, 21 pp., illus., processed, February 1960. (Translated from Russian, Trudy Polyarnyy Nauchno-Issledovatel'skiy Institut Morskogo Rybnogo Khozyaystva i Okeanografii, no. 1, 1938, pp. 74-87.)

Different Response in Male and Female Kil'ka CLUPEONELLA ENGRAULIFORMIS (Borodin) to Electric Light, by D. A. Shubnikov, 3 pp., processed, February 1960. (Translated from Russian, Zoologicheskii Zhurnal, vol. 38, no. 5, 1959, pp. 781-782.)

The Herring Fishery and Its Biological Studies, 156 pp., illus., processed, July 1960. (Translated from Japanese, Gyogyo Kagaku Sosho, no. 4, October 1952, 62 pp.)

Investigations of Herring Migrations in the Barents and Norwegian Seas, by I. V. Shutova-Korzh, 5 pp., illus., processed, February 1960. (Translated from Russian, Rybnoye Khozyaystvo, vol. 35, no. 2, 1959, pp. 5-8.)

Microsporidia GLUGEA HERTWIGI Weissenberg Found in Smelts of Lake Yulis-Yarvi, by E.A. Bogdanova, 1 p., processed. (Translated from Russian, Vsesoyuznogo Nauchno-Issledovatel'skogo Instituta Ozernoga i Rechnogo Rybnogo Khoziaistva, Izvestiya, vol. 42, 1957, p. 330.)

Parasites of Clupeid Fishes in the Black Sea, by G. K. Petrushevskii, 21 pp., processed, March 1960. (Translated from Russian, Leningrad, Vsesoyuznogo Nauchno-Issledovatel'skogo Instituta Ozernogo i Rechnogo Rybnogo Khoziaistva, Izvestiia, vol. 42, 1957, pp. 304-314.)

Supplementary Data on the Reaction of Herring to Electric Light, by D. P. Tikhonov, 3 pp., illus., processed, February 1960. (Translated from Russian, Rybnoye Khozyaystvo, vol. 35, no. 4, 1959, pp. 13-14.)

THE FOLLOWING PUBLICATIONS ARE AVAILABLE ONLY FROM THE SPECIFIC OFFICE MENTIONED:

(Baltimore) Monthly Summary--Fishery Products, January and February 1961, 8 pp. each. (Market News Service, U. S. Fish and Wildlife Service, 400 E. Lombard St., Baltimore 2, Md.) Receipts of fresh- and salt-water fish and shellfish at Baltimore by species and by states and provinces; total receipts by species and comparisons with previous years; and wholesale prices on the Baltimore market; for the months indicated.

California Fishery Market News Monthly Summary, Part I - Fishery Products Production and Market Data, March 1961, 13 pp. (Market News Service, U. S. Fish and Wildlife Service, Post Office Bldg., San Pedro, Calif.) California receipts of the major fisheries (including tuna, mackerel, anchovies, and market fish) at leading ports; packs of major canned products; manufacture of byproducts; and wholesale prices for frozen and canned products; with comparative data; for the month indicated.

California Fishery Market News Monthly Summary, Part II - Fishing Information, April 1961, 8 pp., illus. (U. S. Bureau of Commercial Fisheries, Biological Laboratory, P. O. Box 6121, Pt. Lomas Station, San Diego 6, Calif.) Discusses the cruise during which scientists measured seine depth by the use of sonar; comments on the use of polaroid glasses in sighting schools of tuna; and presents topographic charts and sea-surface temperature charts, Eastern Pacific Ocean, April 1961; and other pertinent data; for the month indicated.

(Chicago) Monthly Summary of Chicago's Fresh and Frozen Fishery Products Receipts and Wholesale Market Prices, April 1961, 13 pp. (Market News Service, U. S. Fish and Wildlife Service, 565 W. Washington St., Chicago 6, Ill.) Receipts at Chicago by species and by states and provinces for fresh- and salt-water fish and shellfish; and wholesale prices for fresh and frozen fishery products; for the month indicated.

A Fish and Wildlife Conservation Plan for the Boeuf and Tensas Rivers and Bayou Macon Project, Arkansas and Louisiana, a Unit of the Mississippi River and Tributaries Review, 28 pp., illus., processed, 1959. (U. S. Fish and Wildlife Service, Bureau of Sport Fisheries and Wildlife, Office of Regional Director, Peachtree-Seventh Bldg., Atlanta 23, Ga.)

Fishery Development Program of the Lower Columbia River, Report for Fiscal Year 1953, 89 pp., illus., processed. (U. S. Fish and Wildlife Service, Regional Director, Seattle, Wash.)

Future Developments in the Production and Utilization of Fish Meal (Report of the International Meeting on Fish Meal, FAO, Rome, March 20-29, 1961), 38 pp., processed. (Branch of Technology, Bureau of Commercial Fisheries, U. S. Fish and Wildlife Service, Washington 25, D. C.) A report on the future developments in the production and utilization of fish meal prepared for the International Meeting on Fish Meal, held in Rome on March 20-29, 1961. The meeting was convened by the Director-General of the Food and Agriculture Organization of the United Nations at the request of certain member governments. The meeting was called as a result of a rapid increase in the world's productive capacity for fish meal without the use being made of the product keeping pace with this expansion. Consequently, stocks of meal accumulated, prices fell substantially, and production had to be reduced in a number of countries. The purpose of the meeting was to assess the world demand for fish meal, both short and long term, in relation to resources and productive capacity; to consider ways and means of increasing the effective demand for fish meal by action on the part of governments and of the industry individually or in concert; and to explore possibilities of ensuring stable conditions in the international market for fish meal.

Monthly Summary of Fishery Products Production in Selected Areas of Virginia, North Carolina, and Maryland, April 1961, 4 pp. (Market News Service, U. S. Fish and Wildlife Service, 18 So. King St., Hampton, Va.) Fishery landings and production for the Virginia areas of Hampton Roads, Lower Northern Neck, and Eastern Shore; the Maryland areas of Crisfield, Cambridge, and Ocean City; and the North Carolina areas of Atlantic, Beaufort, and Morehead

City; together with cumulative and comparative data; for the month indicated.

New England Fisheries--Monthly Summary, March 1961, 22 pp. (Market News Service, U. S. Fish and Wildlife Service, 10 Commonwealth Pier, Boston 10, Mass.) Reviews the principal New England fishery ports, and presents food fish landings by ports and species; industrial fish landings and ex-vessel prices; imports; cold-storage stocks of fishery products in New England warehouses; fishery landings and ex-vessel prices for ports in Massachusetts (Boston, Gloucester, New Bedford, Provincetown, and Woods Hole), Maine (Portland and Rockland), Rhode Island (Point Judith), and Connecticut (Stonington); frozen fishery products prices to primary wholesalers at Boston, Gloucester, and New Bedford; and landings and ex-vessel prices for fares, by species landed at the Boston Fish Pier and sold through the New England Fish Exchange; for the month indicated.

New York City's Wholesale Fishery Trade--Monthly Summary for March 1961, 20 pp. (Market News Service, 155 John St., New York 38, N. Y.) Includes summaries and analyses of receipts and prices on wholesale Fulton Fish Market, imports entered at New York City, primary wholesaler prices for frozen products, and marketing trends; for the month indicated.

Questions and Answers Regarding the Federal Wage-Hour Law Amendments of 1961 Affecting the Fishing Industry, ECML-6, 7 pp., processed, May 1961. (Branch of Economics, Bureau of Commercial Fisheries, U. S. Fish and Wildlife Service, Washington 25, D. C.) A list of questions and answers pertaining to the Federal Wage-Hour Law Amendments of 1961 as they affect the fishing industry. Some of these amendments make changes in the application of the Federal Wage and Hour Law to the fishing industry.

(Seattle) Washington, Oregon, and Alaska Receipts and Landings of Fishery Products for Selected Areas and Fisheries, Monthly Summary, April 1961, 9 pp. (Market News Service, U. S. Fish and Wildlife Service, Pier 42 South, Seattle 4, Wash.) Includes landings and local receipts, with ex-vessel and wholesale prices in some instances, as reported by Seattle and Astoria (Ore.) wholesale dealers; also Northwest Pacific halibut landings; and Washington shrimp landings; for the month indicated.

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THE FOLLOWING SERVICE PUBLICATIONS ARE FOR SALE AND ARE AVAILABLE ONLY FROM THE SUPERINTENDENT OF DOCUMENTS, WASHINGTON 25, D. C.

Embryological Stages in the Sea Lamprey and Effects of Temperature on Development, by George W. Piavis, Fishery Bulletin 182 (from Fishery Bulletin of the Fish and Wildlife Service, vol. 61), 37 pp., illus., printed, 30 cents, 1961.

Filefishes (Monacanthidae) of the Western North Atlantic, by Frederick H. Berry and Louis E. Vogele, Fishery Bulletin 181 (from Fishery Bulletin of the Fish and Wildlife Service, vol. 61), 53 pp., illus., printed, 40 cents, 1961.

"An Improved Instrument to Section Bones for Age and Growth Determinations of Fish," by Arthur Witt, Jr., article, The Progressive Fish-Culturist, vol. 23, no. 2, April 1961, pp. 94-96, illus., printed.

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AIR TRANSPORTATION:

"L'Avion et de Transport de Denrees Perissables sous Regime de Froid" (Controlled Temperature Transport of Perishable Foodstuffs in Aircraft), by M. Maurer, article, Bulletin of the International Institute of Refrigeration, vol. 41, no. 1, 1961, pp. 301-323, illus., printed in French with English abstracts. Institut International du Froid, 177, Boulevard Malesherbes, Paris (17e), France. The full text of a general study for which an abridged text was presented at the 10th International Congress of Refrigeration in August 1959. Contains sections on: "Conditions for Use of Aeroplanes for the Transport of Perishable Foodstuffs;" "Cooling of Aircraft Holds at Ground;" and "Equipment of Aircraft for the Transport of Perishable Foodstuffs under Controlled Temperature."

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Regulations of the Alaska Board of Fish and Game for Commercial Fishing in Alaska, 119 pp., printed. Alaska Department of Fish and Game, 229 Alaska Office Bldg., Juneau, Alaska, 1961.

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"Change in Freshness and CTC Residue of Chlortetracycline-Treated Trawler's Catches with Species,

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"Biochemical Changes in Fish During Maturation," by H. L. A. Tarr, article, Marine Biology, April 1959, pp. 36-50, printed. Proceedings of the Twentieth Annual Biology Colloquim, Oregon State College, Corvallis, Oreg.

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Atlantic Coast Has Changed Tremendously since the War), by T. H. Turner, article, La Peche Maritime, vol. 40, no. 997, April 1961, pp. 221-223, illus., printed in French. La Peche Maritime, 190, Boulevard Haussmann, Paris, France.

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"Urban Family Expenditures for Fish, 1953, 1955 and 1957," by H. C. Frick, article, Trade News, vol. 13, no. 9, March 1961, pp. 5-18, illus., processed. Information and Educational Service, Department of Fisheries, Ottawa, Canada. Reports on three biennial family food expenditure surveys conducted in 1953, 1955, and 1957, by the Dominion Bureau of Statistics. The average weekly family expenditure for fisheries food products in five Canadian cities was 50 cents in 1957. This was above the 1955 figure of 43 cents, but below that for 1953, which was 54 cents. In each of the three years, fish and shellfish purchases represented only two percent of the average weekly family expenditures for all foods of about $22. In the first two surveys, families recorded their fish purchases under three headings: (1) fresh fish, cured fish, and other seafood; (2) canned salmon; and (3) other canned fish and seafood. In 1957, a separate category was used for frozen fish, making four classifications in all. Statistical tables present the results of these surveys.

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"Mudbug Farming," by Percy Viosca, Jr., article, Louisiana Conservationist, vol. 13, no. 3, March 1961, pp. 5-7, 19, illus., printed. Louisiana Conservationist, Wild Life and Fisheries Bldg., 400 Royal St., New Orleans 16, La. Discusses the recent introduction of crawfish farming in Louisiana. Frequently, a crop of crawfish in winter is rotated with a crop of rice in summer, enhancing the value of both products. The author, finding many crawfish farmers operating on a trial and error basis, offers suggestions on kinds of crawfish to rear, soil condition, water supply, fertilizer, vegetation, broodstock, and harvesting.

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"Order No. 258 Promulgating the Act on the Establishment of a Credit Institute for the Fisheries Industry," Food and Agricultural Legislation, vol. IX, no. 2, December 1, 1960, Denmark, XVIII.3/59.1, 7 pp., printed, $1. Columbia University Press, International Documents Service, 2960 Broadway, New York 27, N. Y. Covers the provisions of Denmark Order No. 258, July 30, 1959 (Lovtidende A., No. XX, August 18, 1959, p. 945). The order states that "An Institute shall be established bearing the title of the Fisheries Bank of the Kingdom of Denmark, the purpose of which shall be to support Danish fisheries and the manufacture and marketing of fish and fisheries products by the grant of loans. . . .The State Exchequer shall make available to the Bank the sum of 10 million Danish crowns as a basic fund for financing the Bank's operations."

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equivalent of $75,769,000 in ordinary capital resources and $72,882,500 in resources of the fund for special operations. By the end of 1960, the Bank had received 194 applications for loans and 174 inquiries. At this time, the Bank had 91 applications on an active status, involving $200 million in loan requests.

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Pacific Halibut Fishery Regulations (Effective March 30, 1961), 11 pp., printed. International Pacific Halibut Commission, Fisheries Hall No. 2, University of Washington, Seattle 5, Wash., March 1961. These regulations were published in conformity with the Pacific Halibut Fishery Convention between the United States and Canada, signed March 2, 1953. They are based on biological and statistical investigations, designed to show what catch can be taken from the stocks each year. The 1961 regulations differ from those of 1960 in the following respects: (1) Area 3B is divided into two parts, Area 3B North and Area 3B South, with differential opening dates of April 10 and April 25 respectively; (2) The second season in Areas 1B and 2 is eliminated; (3) the catch limit in Area 2 has been increased from 26.5 million pounds to 28 million pounds, and in Area 3A from 30 million pounds to 33 million pounds; (4) the descriptions of the Timbered Islet and Masset grounds in Area 2, which no longer qualify as nursery grounds, are removed from the regulations.

Utilization of Pacific Halibut Stocks: Yield per Recruitment, Report No. 28, 51 pp., illus., printed. International Pacific Halibut Commission, Fisheries Hall No. 2, University of Washington, Seattle 5, Wash., 1960.

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"Explorations for Herring in the Bay of Fundy and Gulf of Maine," by S. N. Tibbo and V. M. Brawn, article, Journal of the Fisheries Research Board of Canada, vol. 17, September 1960, pp. 735-737, printed. Journal of the Fisheries Research Board of Canada, Queen's Printer & Controller of Stationery, Ottawa, Canada.

"Rapport over Smasildundersøkelser i Nord-Norge med F/F Asterias høsten 1960" (Report on Small Herring Investigations in Northern Norway on Board the Asterias during 1960), by Per Hognestad, article, Fiskets Gang, vol. 47, no. 16, April 20, 1961, pp. 329-333, illus., printed in Norwegian. Fiskets Gang, Fiskeriderektoratet, Radstuplass 10, Bergen, Norway.

"Seasonal and Diurnal Vertical Distribution of Herring (CLUPEA HARENGUS L.) in Passamaquoddy Bay, N. B." by Vivien M. Brawn, article, Journal of the Fisheries Research Board of Canada, vol. 17, September 1960, pp. 699-711, printed. Journal of the Fisheries Research Board of Canada, Queen's Printer & Controller of Stationery, Ottawa, Canada.

IDAHO:

Experimental Rough Fish Control; Annual Progress Report, by Charles R. Fill and James F. Keating, Jr., 49 pp., illus., printed. Fisheries Division, Boise, Idaho, 1960.

_____; Completion Report, 1955-1960, by James F. Keating, 71 pp., printed.

INTERNATIONAL COMMISSIONS:

International North Pacific Fisheries Commission, Bulletin No. 3, January 1961, 27 pp., illus., printed. International North Pacific Fisheries Commission, 6640 NW Marine Dr., Vancouver 8, B. C., Canada. Contains articles on: "Rapid Counting of Nematoda in Salmon by Peptic Digestion," by Joseph A. Stern and others; "Serological Differentiation of Populations of Sockeye Salmon," by G. J. Ridgway, J. E. Cushing, and G. L. Durall; and "Some Features of the Upper Zone of the Sub-Arctic Pacific Ocean," by A. J. Dodimead.

Report by the President on the Eighth Meeting of the Permanent Commission Held in London, May 1960, 37 pp., processed in English and portions in French. Office of the Commission, International Fisheries Convention of 1946, Board of Trade Bldgs., Whitehall Gardens, London SW1, England, 1961. A report on the eighth meeting of the Permanent Commission, International Fisheries Convention of 1946. Includes, among other items, the report of the Committee on Mesh Difficulties, a proposal to increase the mesh size in trawl nets in the northeast part of the Convention area, and a discussion of the state of the herring industry. Also includes the agenda of the eighth meeting, a list of the observers and delegates, and financial reports.

ISRAEL:

Bamidgeh, vol. 12, no. 4, December 1960, 48 pp., illus., printed in Hebrew and English. Bamidgeh, Joint Agricultural Extension Center, Division of Fisheries, Ministry of Agriculture, Tel Aviv, Israel. Contains the following articles: "Suggestions for the Improvement of Fish Breeding," by S. Tal; "An Electric Instrument for Brandmarking Fish," by Rom Moav, G. Wohlfarth, and M. Lahman; "Adaptability of Tilapia nilotica to Various Saline Conditions," by Ruth Lotan; "The Elimination of Uncontrolled Spawns in Carp Fattening Ponds," by J. Pruginin and J. Shechter; and "A Mobile Belt for Hauling and Sorting Fish," by Z. Shatz.

ITALY:

Bollettino di Pesca, Piscicoltura e Idrobiologia (Bulletin of Fishery, Fish Culture, and Hydrobiology), vol. 14, no. 2, July-December 1959, 116 pp., illus., printed in Italian. Laboratorio Centrale di Idrobiologia, Piazza Borghese, 91, Rome, Italy. Includes, among others, these articles: "Lo Scampo del Mare Tirreno (Nato I)" (The lobster, Nephrops norevegicus, of the Tyrrhenian Sea), by Francesco Matta; "Osservazioni Compiute nelle Tonnara del 'Tono'

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

di Milazzo durante le Stagione di Pesca 1958" (Observations Made of Tuna Pound Nets of Milazzo, Sicily, during the Summer Fishery of 1958), by Francesco Li Greci; "La Pesca nell'Isola d'Elba" (The Fisheries of the Island of Elba), by Maria Giovanna Pedrotti; and "Osservazioni Eseguite in Alcune Tonnare del Basso Tirreno durante la Campagna di Pesca 1959" (Observations Made of Some Tuna Pound Nets in the Lower Tyrrhenian Sea during the 1959 Fishing Season), by Sebastiano Genovese.

LAW OF THE SEA:

"Landhelgismalid, Lausn a Deilunni vith Breth--Aukning Fiskveithilogsogunnar" (Dispute on Fishing Limits, Dispute with the British--Extension of Fishing Zone), article, Aegir, vol. 54, no. 4, March 1961, pp. 70-79, illus., printed in Icelandic. Aegir, Posth. 20, Reykjavik, Iceland.

"Sedentary Fisheries and the Convention on the Continental Shelf," by Richard Young, article, American Journal of International Law, vol. 55, no. 2, April 1961, pp. 359-373, printed. American Society of International Law, Prince and Lemon Sts., Lancaster, Pa. The Convention on the Continental Shelf of April 29, 1958 declares that the "coastal State exercises over the continental shelf sovereign rights for the purpose of exploring it and exploiting its natural resources." It later defines these resources as "the mineral and other non-living resources of the seabed and subsoil together with living organisms belonging to sedentary species, that is to say, organisms which, at the harvestable stage, either are immobile on or under the seabed or are unable to move except in constant physical contact with the seabed or the subsoil." This article discusses the history of the legal aspects of the continental shelf resources and the work of the International Law Commission on this subject as part of its study of the law of the sea. The proceedings of the Fourth Committee (Continental Shelf) of the Geneva Conference are also discussed, as well as the status provided by the Convention, its scope, and problems which might arise from it.

LOBSTERS:

Pesca Exploratoria de la Langosta con Nasas, al Sur de Camaguey, Cuba (Exploratory Spiny Lobster Fishing with Traps, South of Camaguey, Cuba), by Rene J. Buesa Mas, Contribution No. 11, 28 pp., illus., printed in Spanish. Centro de Investigaciones Pesqueras, Seccion de Pesca, Instituto Nacional de la Reforma Agraria, Playa Habana, Bauta, Cuba.

LONG-LINER:

"Le Daguite Premier Thonier Construit en Europe pour la Peche a la Ligne Longue" (The Daguite, First Tuna Vessel Constructed in Europe for the Long-Line Fishery), article, La Peche Maritime, vol. 40, no. 996, March 1961, pp. 167-171, 173, illus., printed in French. La Peche Maritime, 190, Boulevard Haussmann, Paris, France.

MACKEREL:

"Studies on the Method for Testing the Spoilage of Food. XI - Determination of Volatile Reducing Substances of Mackerel Flesh by Steam Distillation," by Tetsuo Tomiyama and others, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 26, January 1960, pp. 33-38, printed in Japa. se with English abstract. Japanese Society of Scientific Fisheries, c/o Tokyo University of Fisheries. Shiba-kaigandori, 6-chome, Tokyo, Japan.

MARINE AIDS:

List of Lights and Other Marine Aids, Vol. IV, Great Lakes, United States and Canada, Catalog No. T 47.52:v.4/961, 240 pp., illus., printed, $1.75. U. S. Coast Guard, Washington 25, D. C., 1961. (Available from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) Lists the lights and other marine aids to navigation maintained or under authority of the U. S. Coast Guard and the Dominion of Canada on the Great Lakes and the St. Lawrence River above Regis River.

MARINE BIOLOGY:

The Biological Bulletin, vol. 120, no. 2, April 1961, 155 pp., illus., printed. Marine Biological Laboratory, Woods Hole, Mass. Includes, among others, these articles: "An Experimental Demonstration of Echo-Location Behavior in the Porpoise, Tursiops truncatus (Montagu)," by Kenneth S. Norris and others; "Skeleton Formation of Sea Urchin Larvae. III--Similarity of Effect of Low Calcium and High Magnesium on Spicule Formation," by Kayo Okazaki; and "The Effect of Temperature on the Growth and Survival of Several Marine Algal Species," by Ravenna Ukeles.

Journal of the Marine Biological Association of the United Kingdom, vol. 41, no. 1, February 1961, 227 pp., illus., printed, 50s. (US$8.50). Cambridge University Press, 32 E. 57th St., New York 22, N. Y. Includes, among others, these articles: "The Long Rough Dabs of the Clyde Sea Area," by T. B. Bagenal; "Vitamin B_{12} and Marine Ecology: the Response of Monochrysis lutheri," by M. R. Droop; "A Pressurizing Device for a Camera Case Designed for Use in Shallow Water," by D. J. Scarratt; and "Observations on the Mortality of Ostrea edulis," by P. R. Walne.

MARINE MAMMALS:

Results of the Puritan-American Museum of Natural History Expedition to Western Mexico. 10--Marine Mammals from the Coasts of Baja California and the Tres Marias Islands, Mexico, by Richard G. Van Gelder, American Museum Novitates, no. 1992, March 8, 1960, 27 pp., illus., printed. The American Museum of Natural History, Central Park W. at 79th St., New York 24, N. Y.

MUSSELS:

"Seasonal Variations in the Chemical Composition of Mussel (MYTILUS EDULIS). PART 2 - Carbohydrates," by F. Fraga, article, Investigacion Pesquera, vol. 11, January 1958, p. 33, printed in Spanish. Investigacion Pesquera, Instituto de Investigaciones Pesqueras, Universidad de Barcelona, Barcelona, Spain.

NAVIGATION:

United States Coast Pilot I--Atlantic Coast, Eastport to Cape Cod, Sixth Edition, 243 pp., illus., printed, $2.50. Coast and Geodetic Survey, U. S. Department of Commerce, 1960.

NORWAY:

"Loddeundersokelser med F/F Johan Hjort, 22 February-18 Mars 1961" (Capelin Survey by F/F Johan

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

Hjort February 22-March 18, 1961), by D. Moller and others, article, Fiskets Gang, vol. 47, no. 17, April 27, 1961, pp. 347-350, illus., printed in Norwegian. Fiskets Gang, Fiskeridirektoratet, Radstuplass 10, Bergen, Norway

OCEANOGRAPHY:

Oceanographic Data from ATLANTIS Cruise 247, January-June 1959 for the International Geophysical Year of 1957-58, Reference No. 60-40, 151 pp., illus., processed. Woods Hole Oceanographic Institution, Woods Hole, Mass., March 1960.

Studies of Physical, Chemical, and Biological Oceanography in the Vicinity of the Revilla Gigedo Islands during the "Island Current Survey" of 1957, by Edward B. Bennett and Milner B. Schaefer, Inter-American Tropical Tuna Commission Bulletin, vol. 4, no. 5, 1960, 101 pp., illus., printed. Inter-American Tropical Tuna Commission, La Jolla, Calif.

O.E.C.D.:

Organization for Economic Cooperation and Development, Department of State Publication 7161, 24 pp., printed, 15 cents. Office of Public Services, Bureau of Public Affairs, U. S. Department of State, Washington, D. C., April 1961. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.)

OTOLITHS:

"The Growth of the Fish Otolith," by Takaaki Irie, article, Journal of the Faculty of Fisheries and Animal Husbandry, Hiroshima University, vol. 3, no. 1, December 1960, pp. 203-221, illus., printed. The Faculty of Fisheries and Animal Husbandry, Hiroshima University, Fukuyama, Japan.

PERU:

"Las Conservas Peruanas" (Peruvian Canned Products), article, Pesca, vol. 11, no. 3, March 1961, pp. 11-17, illus., printed in Spanish. Pesca, Av. Wilson 911, Oficina 602, Lima, Peru.

PLANKTON:

Phytoplankton in the Black Sea and Its Quantitative Growth, by N. V. Morozova-Vodianitskaia, TRANS-80, 28 pp., processed. (Translated from Russian, Trudy Sevastopol'skoi Biologicheskoi Stantsii, vol. 9, 1957, pp. 3-13.) Technical Services Branch, Division of Oceanography, U. S. Navy Hydrographic Office, Washington, D. C., 1960.

POISONOUS FISH:

Peces Peligrosos en los Rios y Lagos de la Amazonia Peruana (Dangerous Fishes in the Rivers and Lakes of the Peruvian Amazon), by Jorge E. Sanchez R., Serie de Divulgacion Cientifica No. 2, 15 pp., illus., printed in Spanish. Ministerio de Agricultura, Direccion de Pesqueria y Caza, Lima, Peru, 1951.

RADIATION PROCESSING:

"Current Aspects of the Wholesomeness of Irradiated Food," by Merrill Stafford Read, article, Journal of Agricultural and Food Chemistry, vol. 8, September-October 1960, pp. 342-349, printed. Journal of Agricultural and Food Chemistry, American Chemical Society, 1801 K Street NW., Washington 6, D. C.

RANCIDITY:

"A Simple Method for Judging the Rancidity of Oily Fish," by Shigeshi Masuda, article, Bulletin of the Seikai Regional Fisheries Research Laboratory, no. 12, 1957, pp. 43-59, printed in Japanese. Suisancho Seikai-ku Suisan Kenkyusho, Maruo-machi Nagasaki-shi, Japan.

REFRIGERATED VESSELS:

"U.S.S.R.'s Refrigerated Fishing Vessels," by A. Kan and E. Pavlov, article, Quick Frozen Foods, vol. 23, September 1960, pp. 40-41, 94-96, printed. Quick Frozen Foods, E. W. Williams Publications, Inc., 82 Wall St., New York 5, N. Y.

SALMON:

"Inosine in the Muscle of Pacific Salmon Stored in Ice," by Vera M. Creelman and Neil Tomlison, article, Journal of the Fisheries Research Board of Canada, vol. 17, May 1960, pp. 449-451, printed. Journal of the Fisheries Research Board of Canada, Queen's Printer & Controller of Stationery, Ottawa, Canada.

A Pacific Salmon (ONCORHYNCHUS GORBUSCHA) in Scottish Waters, by W. M. Shearer and E. Trewavas, printed. (Reprinted from Nature, vol. 188, no. 4753, December 3, 1960.) St. Martin's Press, Inc., 175 Fifth Ave., New York 10, N. Y.

Salmon Spawning Report--British Columbia, 1960, 16 pp., processed. Department of Fisheries, Pacific Area, 1110 Georgia St. W., Vancouver 5, B. C., Canada, May 9, 1961. A report covering the seeding of the salmon spawning areas of British Columbia for 1960. Developments or trends of the 1960 migration and spawning escapement of salmon, by species and areas, are discussed.

Statistics on Salmon Sport Fishing in the Tidal Waters of British Columbia, 1960, 29 pp., illus., processed. Department of Fisheries of Canada, 1110 W. Georgia St., Vancouver 5, B. C., Canada, March 31, 1961. For the second successive year, the salmon sport catch in British Columbia showed a drop, with 331,425 salmon and grilse taken in 1960, down by 64,950 from 1959. The sports catch of all species, except coho, was down from 1959. Both sport and commercial fishermen experienced a sharp decline in salmon landings in 1960. However, the drop was proportionately more pronounced in commercial landings, with the over-all catch the lowest since records were first kept in 1910.

"Stillehavslaks pa Norskekysten" (Pacific Pink Salmon off the Coast of Norway), by Birger Rasmussen, article, Fiskets Gang, vol. 47, no. 17, April 27, 1961, pp. 351-354, illus., printed in Norwegian. Fiskets Gang, Fiskeridirektoratet, Radstuplass 10, Bergen, Norway.

Toxic Effects of Organic and Inorganic Pollutants on Young Salmon and Trout, Research Bulletin No. 5, 274 pp., processed. Washington State Department of Fisheries, 4015 20th Ave., W., Seattle 99, Wash., September 1960.

"Tryptic Enzymes of Chinook Salmon," by C. Bradford Croston, article, Archives of Biochemistry and Biophysics, vol. 89, August 1960, pp. 202-206,

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printed. Archives of Biochemistry and Biophysics, c/o Academic Press Inc., 111 Fifth Ave., New York 3, N. Y.

SALT FISH:

"Preparacao e Secagem de Peixes Salgados nas Regioes Tropicais--Experimentacao com algumas Especies da Amazonia" (Preparation and Drying of Salt Fish in Tropical Regions--Experiments with Some Species from the Amazon), by Antonio Torres Botelho, article, Boletim de Pesca, vol. 13, no. 70, March 1961, pp. 39-59, illus., printed in Portuguese. Boletim de Pesca, R. S. Bento, 644, 4.°-Esq., Lisbon, Portugal.

"Prevention of Red Discoloration in Salt Fish," by A. Torres Botelho, article, Boletim da Pesca, vol. 11, March 1958, pp. 11, printed in Portuguese. Boletim da Pesca, Avenida da Liberdade, 211-4, Lisbon, Portugal.

SARDINES:

The Pilchard of South West Africa (SARDINOPS OCELLATA), Size Composition of the Commercial Catches in South West Africa, 1952-1957, by J. P. Matthews, Investigational Report No. 1, 45 pp., illus., printed. Administration of South West Africa, Marine Research Laboratory, Windhoek, South West Africa. Deals with the size composition of the commercial catches of the South-West African pilchard, Sardinops ocellata (Pappe), which were made in the vicinity of Walvis Bay along the South-West African coast during the period October 1952 to December 1957. A description of the method of sampling and of the treatment of the samples is given. Then follows a description of the size composition of the catches, by months and by years, and a comparison with the fish which occurred in the catches of the Union of South Africa. Includes statistical tables showing length frequencies of commercial pilchard catches, 1952-1957, by months and by years, and graphs showing length frequencies during these years.

SEAWEED:

Annual Report for 1960, 19 pp., printed. Institute of Seaweed Research, Inveresk, Midlothian, Scotland. Discusses developments in the Scottish and foreign seaweed byproducts industry during 1960, and the Institute's information and technical assistance services. Also discusses production of alginates from seaweed, use of seaweed meal in animal feedstuffs, development of fertilizers from seaweed, sponsorship of seaweed research by other organizations, and a list of publications on seaweed published during 1960.

SHIPWORMS:

A Method of Exterminating Shipworms of the Family Teredinidae by Electric Current, by N. V. Vershinskii, TRANS-79, 8 pp., illus., processed. (Translated from Russian, Biulleten' Okeanograficheskoi Komissii, no. 1, 1958, pp. 60-63.) U. S. Navy Hydrographic Office, Washington, D. C., 1960.

SHRIMP:

"Assessment of the Progressive Spoilage of Ice-Stored Shrimp," by J. R. Iyengar and others, article, Journal of the Fisheries Research Board of Canada, vol. 17, July 1960, pp. 475-485, printed. Journal of the Fisheries Research Board of Canada, Queen's Printer & Controller of Stationery, Ottawa, Canada.

"Directory of Mexican Shrimp Producing Firms," article, Seafood Merchandising, vol. 20, June 1960, pp. 33-35, printed. Seafood Merchandising, H. L. Peace Publications, 624 Gravier Street, New Orleans 9, La.

The Fairy Shrimp BRANCHINECTA CAMPESTRIS from Northwestern United States (Crustacea: Phyllopoda), by James E. Lynch, Proceedings of the United States National Museum, vol. 112, no. 3447, 1960, 13 pp., illus., printed. United States National Museum, Smithsonian Institution, Washington, D. C.

The Feeding Mechanism of Some Atyid Prawns of the Genus CARIDINA, by Geoffrey Fryer, Transactions of the Royal Society of Edinburgh, vol. 60, no. 10, 1959-60, 28 pp., illus., printed, 10s. 6d. (about US$1.50). Royal Society of Edinburgh, 22 George St., Edinburgh 2, Scotland, 1960.

The Texas Shrimp Fishery, by William C. Guest, Bulletin No. 36, 22 pp., illus., printed. Texas Game and Fish Commission, Walton State Bldg., Austin 14, Tex., 1958. Presents details of the Texas shrimp industry, by far the most important commercial fishery in the State. The quantity of shrimp landed increased from 18 million pounds in the fiscal year 1947/48 to over 79 million pounds in 1954/55. This pamphlet discusses the species of shrimp landed in Texas, life histories of commercial shrimp, the commercial shrimp fishery, and the bait shrimp fishery.

SMALL BUSINESS MANAGEMENT:

Improved Accounting Methods for Wholesale Food Distributors, Marketing Research Report No. 454, 146 pp., illus., processed. Transportation and Facilities Research Division, Agricultural Marketing Service, U. S. Department of Agriculture, Washington, D. C. (Available from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) This report is based on detailed studies in the accounting departments of 7 wholesale food distributors and on observations made in numerous wholesale food distribution businesses in the United States and Canada. Its primary objectives were: (1) to apply the principles of work simplification to assembling, posting, totaling, and balancing the thousands of daily transactions for accumulating and summarizing into the records of account; (2) to develop improved methods of financial reporting to management and a standard simplified procedure for maintaining the general ledger with manual methods, automatic tabulating machine methods, and electronic computers having memory units; (3) to develop a method of providing reports, as byproducts of the accounting system, on productivity in warehousing, selling, and delivery; and (4) to develop a method of accounting and account classification that can be used throughout the industry.

The Management Side of Small-Plant R & D, by Leland S. Hobson, Management Aids for Small Manufacturers No. 119, 4 pp., processed. Small Business Administration, Washington 25, D. C., December 1960.

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This leaflet is designed to help owners and managers of small plants understand better the administrative side of technology as a stepping stone toward increased business and better profits. Suggestions to the small-plant manager include: checking his ideas of "research" and "development," knowing what goes on, making research function separate from operation of the plant, reviewing his research budget regularly, keeping his staff quality high and balanced, choosing projects wisely, scheduling research budget-wise as well as time-wise, and using special research-project teams.

Meeting the Risks of Change, by Edward L. Anthony, Small Marketers Aid No. 66, 4 pp., printed. Small Business Administration, Washington 25, D. C., April 1961. Change and risk--two universal factors in business--can weaken or strengthen the small marketer. He can let change push him around or he can meet its risks by using new conditions to his advantage. Two important kinds of change are technological developments and shifts in demand. This leaflet suggests that the small marketer can cut down the risks of change. In many cases, by understanding change and by planning for it, he can use change to strengthen his competitive position. Often, the soundest manager is the one who recognizes a trend in time, but who avoids the "first-or-nothing" gambles. Principles and cases are included which should stimulate thinking on how to meet the risks of change in stores, wholesale houses, and service establishments.

SPINY LOBSTERS:

Aproveitamento das Lagostas do Noroeste Africano (Utilization of Spiny Lobsters from Northeastern Africa), by C. Fernando Costa, Publication No. 36, 126 pp., illus., printed in Portuguese. Gabinete de Estudos das Pescas, Lisbon, Portugal, 1960.

SPOILAGE:

"Role of Psychrophilic Bacteria in Frozen Food Spoilage," by A. C. Peterson and M. F. Gunderson, article, Food Technology, vol. 14, September 1960, pp. 413-417, printed. Food Technology, the Garrard Press, 510 North Hickory, Champaign, Ill.

"Studies on the Method for Testing the Spoilage of Food. X--Errors Involved in OTA's Method for Determination of Histamine," by Atsushi Tsuda and others, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 25, September 1959, pp. 381-387, printed in Japanese with English abstract. Japanese Society of Scientific Fisheries, c/o Tokyo University of Fisheries, Shiba-kaigan-dori, 6-chome, Tokyo, Japan.

SQUID:

"Some Aspects on the Water-Soluble Proteins of Squid Muscle," by Juichiro J. Matsumoto, article, Bulletin of Tokai Regional Fisheries Research Laboratory, no. 20, May 1958, pp. 65-75, printed. Tokai Regional Fisheries Research Laboratory, Tsukishima, Chuo-ku, Tokyo, Japan.

TARIFFS:

Import Tariff System of Denmark, WTIS Part 2, Operations Report No. 61-17, 2 pp., printed, single copy 10 cents. Bureau of Foreign Commerce, U. S. Department of Commerce, Washington 25, D. C., March 1961.

_____ Venezuela, WTIS Part 2, Operations Report No. 61-18, 2 pp., printed, single copy 10 cents, March 1961.

_____ Mozambique, WTIS Part 2, Operations Report No. 61-19, 2 pp., printed, single copy 10 cents, March 1961.

_____ Sudan, WTIS Part 2, Operations Report No. 61-21, 2 pp., printed, single copy 10 cents. March 1961.

_____ France, WTIS Part 2, Economic Report No. 61-26, 2 pp., printed, 10 cents a single copy, April 1961.

Import Tariff System of Iran, WTIS Part 2, Operations Report No. 60-59, 2 pp., printed, 10 cents. Bureau of Foreign Commerce, U. S. Department of Commerce, Washington, D. C., November 1960. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.)

_____ India, WTIS Part 2, Operations Report No. 60-60, 2 pp., printed, 10 cents, November 1960.

_____ New Zealand, WTIS Part 2, Operations Report No. 60-61, 2 pp., printed, 10 cents, November 1960.

_____ Australia, WTIS Part 2, Operations Report No. 60-62, 2 pp., printed, 10 cents, November 1960.

TENNESSEE VALLEY AUTHORITY:

1959 Annual Report, Report No. 228-59, 13 pp., illus., printed. Fish and Game Branch, Division of Forestry Relations, Tennessee Valley Authority, Norris, Tenn.

TEXAS:

The Marine Fisheries Division of the Texas Game and Fish Commission, 8 pp., illus., printed. The Marine Fisheries Division, Texas Game and Fish Commission, Walton State Bldg., Austin, Texas. A brief description of the Texas marine fisheries and activities of the Marine Fisheries Division. Aiming at improved fishery harvests, study is made of the spawning, feeding, growth, and migration of food fish. From these studies, proper management techniques and protective laws are developed. The Texas Gulf Coast now has a steadily growing reputation as one of the nation's top sport fishing areas. In the commercial field, much work has been done toward locating concentrations of market fish. Private industry has been encouraged, with some success, to establish new fisheries, resulting in increased industrial income to Texas. Shrimp, oysters, and the edible blue crab have received a great deal of attention. Other fishery research studies are described.

THAILAND:

Fisheries Record of Thailand 1959, 50 pp., illus., processed in Thai and English. Statistics Section, Department of Fisheries, Ministry of Agriculture, Bangkok, Thailand, October 1960. Contains statis-

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tical tables giving annual catch and utilization of marine and fresh-water fish, by kind and provinces; sales of fresh and salted fish and fresh-water fish; and fish-pond production. It also contains data on foreign trade in fishery products; registered fishing vessels; fishing gear; and production of fishery products. Tables include data on salt- and fresh-water shrimp landings and utilization.

TRADE:

Freeing Trade in Europe, 28 pp., printed. British Information Services, 45 Rockefeller Plaza, New York 20, N. Y., December 1960. Outlines the course of European economic integration, the main features of, and the background to, the new economic organizations which have emerged in Europe, and the efforts being made to bring about some form of wider unity. The approach of Britain to the problems, taking into account its other commitments to the Commonwealth and to international trading organizations, are recorded in detail.

TRADE LISTS:

The Bureau of Foreign Commerce, U. S. Department of Commerce, Washington 25, D. C., has published the following mimeographed trade lists. Copies may be obtained by firms in the United States from that office or from Department of Commerce field offices at $2 each.

Canneries--Italy, 19 pp. (April 1961). Lists the names and addresses, size of firms, and types of products handled by each firm. Includes firms canning fish.

Boat and Ship Builders, Repairers and Chandlers--Brazil, 27 pp. (March 1961). Lists the names and addresses, size of boat and ship builders, etc., and types of equipment handled by each firm. Includes firms dealing in fishing craft.

Oils (Animal, Fish, and Vegetable)--Importers, Dealers, Producers, Refiners, and Exporters--Colombia, 11 pp. (March 1961). Includes basic trade and industry data, and lists the names and addresses, size of firms, and types of products handled by each firm. Includes firms dealing in fish oils.

TROUT:

"Icing of Trout," by P. Hansen, article, Ferskvandsfiskeribladet, vol. 57, no. 3, pp. 34-38, printed in Danish. Ferskvandsfiskeribladet Frederiksdal, Kgs. Lyngby, Denmark.

Observations on the Life History of the Hybrid between Eastern Brook Trout and Lake Trout in Algonquin Park, Ontario, by N. V. Martin and N. S. Baldwin, 11 pp., illus., printed. (Reprinted from Journal of the Fisheries Research Board of Canada, vol. 17, no. 4, 1960, pp. 541-551.) Queen's Printer and Controller of Stationery, Ottawa, Canada.

The Story of New Mexico's Trout Hatcheries, 12 pp., illus., printed. Department of Game and Fish, Santa Fe, New Mexico.

"Studies on the Fat Metabolism of Fish. I--Contents of Fat and Phosphorus During the Growth of Rainbow Trout," by Toyoki Ono, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 24, no. 10, 1959, pp. 858-861, printed in Japanese with English abstract. Japanese Society of Scientific Fisheries, c/o Tokyo University of Fisheries, Shiba-kaigandori, 6-chome, Tokyo, Japan.

TROUT FARMING:

Trout in Farm and Ranch Ponds, Catalog No. A 1.9:2154, 17 pp., illus., printed, 10 cents. U. S. Department of Agriculture, Washington 25, D. C., 1961. (Available from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) Tells how to plan and manage farm and ranch ponds to grow trout for food and recreation and lists some essentials for commercial production.

"U. S. Trout Industry and Its Foreign Competitors," article, U. S. Trout News, vol. 5, no. 6, March-April 1961, pp. 4-5, 19-22, illus., printed. U. S. Trout Farmers Association, 110 Social Hall Ave., Salt Lake City 11, Utah. An article, based on letters from industry members to a magazine editor, that defines the basic differences between the U. S. and foreign trout industries. Also presents information on how to improve trout flavor and quality through better cultural methods.

TUNA:

Distribution of Fishing Effort and Resulting Tuna Catches from the Eastern Tropical Pacific by Quarters of the Year, 1951-1958, by Franklin G. Alverson, Inter-American Tropical Tuna Commission Bulletin, vol. 4, no. 6, 1960, 128 pp., illus., printed in English and Spanish. Inter-American Tropical Tuna Commission, La Jolla, Calif.

"Problems of Color of Frozen Tuna Meat on Cooking," by T. Yamamoto, article, Refrigeration, vol. 35, March 1960, pp. 1-8, printed. Refrigeration, Nihon Reito Kyokai (Japanese Society of Refrigeration) No. 3, 1-Chome, Ginza Nishi, Chuo-ku, Tokyo.

"Puerto Rico Cannery Packs 100 Tons of Prime Tuna Daily for U. S. Trade," by Harold N. Underhill, article, Canner/Packer (Western Edition), vol. 128, November 1959, pp. 30-31, printed. Canner and Packer, Triad Publishing Co., 59 E. Monroe St., Chicago 3, Ill.

Species and Size Relationships within Schools of Yellowfin and Skipjack Tuna, as Indicated by Catches in the Eastern Tropical Pacific Ocean, by Gordon C. Bradhead and Craig J. Orange, Inter-American Tropical Tuna Commission Bulletin, vol. 4, no. 7, 1960, 46 pp., illus., printed in Spanish and English. Inter-American Tropical Tuna Commission, La Jolla, Calif.

UNDERWATER PHOTOGRAPHY:

Underwater Photography in the Study of Hydromechanical Phenomena, by Joseph D. Richard and Edmond L. Fisher, Final Report 60-4, 11 pp., illus., processed. The Marine Laboratory, Institute of Marine Science, University of Miami, #1 Rickenbacker Causeway, Miami 49, Fla., October 1960.

UNITED KINGDOM:

White Fish Authority Publicity Campaign 1961-1962, 11 pp., illus., processed. White Fish Authority, Lincoln's Inn Chambers, 2/3 Cursitor St., London EC4, England. Covers an outline of the White Fish Authority's campaign to advertise fish. The consumer

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

survey carried out by the Authority in 1960 indicated that, while fish was served from time to time in all but a fraction of households, there was a general indifference to the value of fish among housewives and that more attention should be given to the cooking and serving of fish. Press advertisements, therefore, are designed to give a new interest to fish cookery. They concentrate upon new and interesting ways to cook fish which, while easy and simple, add color and glamour to fish, and they introduce a new theme--fish sauces. Merchandising material is closely integrated and linked with the new advertising theme. Other aspects of the White Fish Authority's educational work are also discussed. Included is a leaflet entitled "How You Can Help to Keep Fish Fresh," which gives a few hints on transporting fish by train; and samples of flyers entitled "Fish with a Difference;" "The Way You Cook Your Fish;" "What's Sauce for the Fish;" and "5-Minute Home Made Sauces."

"World's Largest Fish Centre Opened in London," article, Food Manufacture, vol. 35, October 1960, pp. 435-436, printed. Food Manufacture, Leonard Hill, Ltd., Stratford House, 9 Eden Street, London NW1, England.

U.S.S.R.:

The following English translations of foreign language articles are available from the Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C.

Behavior of a Trawl in Water, by E. A. Lebedev, OTS 60-51180, 7 pp., illus., processed, 50 cents. (Translated from Rybnoe Khozyaistvo, vol. 35, no. 2, 1959, pp. 39-42.)

Our Observations on the Behavior of the Trawl in Water, by N. A. Lyapin, OTS 60-51080, 5 pp., illus., processed, 50 cents. (Translated from Rybnoe Khozyaistvo, vol. 35, no. 2, 1959, pp. 43-46.)

Some Suggestions on the Standardization of Far-Eastern Trawls, by A. V. Lestev and G. E. Grishchenko, OTS 60-51129, 11 pp., illus., processed, 50 cents. (Translated from Rybnoe Khozyaistvo, vol. 35, no. 2, 1959, pp. 33-39.)

Deep-Sea Fish of Far Eastern Seas of the U.S.S.R., by T. S. Rass, OTS 60-21099, 21 pp., illus., processed, 50 cents, 1960. (Translated from Russian, Zoologicheskii Zhurnal, vol. 33, no. 6, 1954, pp. 1312-1324.)

Determining the Diurnal Amount of Food Consumed by the Young of Sockeye Salmon and the Three-Spined Stickleback by the Use of the Respiration Method, by E. M. Krokhin, OTS 60-21106, 21 pp., illus., processed, 50 cents, 1960. (Translated from Izvestiya Tikhookeanskogo Nauchno-Issledovatel'skogo Instituta Rybnogo Khozyaistva i Okeanografii, vol. 44, 1957, pp. 97-110.)

Kuroshio and the Population of the Amur Fall Chum Salmon (ONCORHYNCHUS KETA (Walb.) Infrasp. Autumnalis), by I. B. Birman, OTS 60-21095, 9 pp., illus., printed, 50 cents. (Translated from Voprosy Ikhtiologii, no. 8, 1957, pp. 3-7.)

Morpho-Biological and Morphometric Characteristics of Pink Salmon of the Amgun' and Iska Rivers, by R. Enyutina, OTS 60-21097, 8 pp., processed, 50 cents, 1960. (Translated from Russian, Izvestiya Tikhookeanskogo Nauchno-Issledovatel'skogo Instituta Rybnogo Khozyaistva i Okeanografii, no. 41, 1954, pp. 333-336.)

The Most Numerous Deep-Sea Fish in Far Eastern Seas--The Cyclothone--CYCLOTHONE MICRODON Guenther (Pisces, Gonostomidae), by V. A. Mukhacheva, OTS 60-21110, 16 pp., illus., processed, 50 cents, 1960. (Translated from Russian, Akademiya Nauk, SSSR, Trudy Insituta Okeanologii, vol. 11, 1954, pp. 206-219.)

Saury Concentration Areas and Fisheries in the Pacific Ocean, by L. V. Klyuev, OTS 60-21100, 9 pp., illus., processed, 50 cents, 1960. (Translated from Rybnoe Khozyaistvo, vol. 34, no. 5, 1958, pp. 8-13.)

Our Experience in Introducing Complex Mechanization, by K. P. Orishich, OTS 60-21146, 9 pp., illus., processed, 50 cents, 1960. (Translated from Rybnoe Khozyaistvo, vol. 34, no. 7, 1958, pp. 43-49.)

West Kamchatka Salmon, Their Commercial Exploitation and Reproduction, by R. S. Semko, OTS 60-21123, 14 pp., processed, 50 cents, 1960. (Translated from Russian, Akademiya Nauk SSSR, Ikhtiologicheskaya Komissiya, Trudy Soveshchanii, no. 4, 1954, pp. 38-47.)

VESSELS:

Boat Building--A Complete Handbook of Wooden Boat Construction, by H. I. Chapelle, 624 pp., illus., printed, 50s. (about US$7). George Allen and Unwin, Ltd., 40 Museum St., London WC1, England, 1956.

WEATHER CHARTS:

Coastal Warning Facilities Charts, 1961, 5 charts, 2 pp. each, processed, 10 cents each. Weather Bureau, U. S. Department of Commerce, Washington, D. C., 1961. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) Charts show stations displaying storm warnings; explanation of warning displays; and schedules of AM and FM radio and TV stations that broadcast weather forecasts and warnings. The charts cover Eastport, Maine, to Montauk Point, N.Y.; Montauk Point, N. Y., to Manasquan, N. J.; Manasquan, N. J., to Cape Hatteras and Chesapeake Bay; Cape Hatteras to Brunswick, Ga.; and Eastern Florida.

WEST INDIES:

"W. I. Fisheries Development 1959/60," by Ernest Hess, article, West Indies Fisheries Bulletin, no. 1, January-February 1961, pp. 1-3, processed. Federal Fisheries Adviser, Ministry of Natural Resources and Agriculture, Federal House, Port-of-Spain, Trinidad. Discusses mechanization of fishing boats, introduction of experimental fishing vessels, improvement of shore facilities, progress in distribution of fishery products, advances in fish culture and conservation, formation of cooperatives, and progress in research during 1959/60.

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WHALE:
Preservation of Whale Meat, by Roland G. Booth, U. S. Patent No. 2,934,440, April 26, 1960. U. S. Patent Office, Department of Commerce, Washington 25, D. C.

WHALING:
"Catch Reports--Pelagic Catch in the Season 1960/61," article, Norsk Hvalfangst-Tidende (The Norwegian Whaling Gazette), vol. 50, no. 3, March 1961, pp. 111-113, printed in Norwegian and English. Norsk Hvalfangst-Tidende, Sandefjord, Norway. Presents the results of the 1960/61 whaling season for the Norwegian, Japanese, British, and Netherlands whaling fleets. Includes statistical tables showing yield in barrels of whale oil for each factoryship, and comparisons with the previous season.

CORRECTION

GREAT LAKES UNIFORM FISHERY REGULATIONS

In the April 1961 issue of Commercial Fisheries Review, p. 43, a news item appeared under the headings: "Great Lakes Fisheries Commission. Uniform Regulations Being Drafted." The article pointed out that model legislation is being drafted to establish uniform regulations for commercial and sport fishing in the Great Lakes. The group drafting this legislation is the Great Lakes Commission, a state Compact group, and not the Great Lakes Fisheries Commission (an international fishery commission) as indicated in the article. Also, the scientific name given in the lake trout sketch should have read "Cristivomer namaycush," but we understand that taxonomists now have assigned the scientific name of "Salvelinus namaycush" to the lake trout.

CORRECTION

APPLICATION OF STEAMING AND VACUUM TO SHUCKING AND CLEANING SCALLOPS

The article "Application of Steaming and Vacuum to Shucking and Cleaning Scallops," by Harvey R. Bullis, Jr. and Travis D. Love, which appeared in the May 1961 (pp. 1-4) issue of Commercial Fisheries Review has two errors. On page 2, the first sentence of the paragraph subheaded "Procedure" should read: "The scallops were placed by hand in a flat, shallow pan, where they were held for 20 seconds in sufficient boiling water (approximately $\frac{3}{4}$ of an inch) to cover the lower shell."

The last two column headings ("Moisture" and "Ash") in table 1, page 3, are reversed. The corrected table follows:

Table 1 - Proximate Composition of Scallop Viscera and Meats (Muscles)

Sample	Protein	Oil	Moisture	Ash
	(Percent)			
Viscera	9.7	2.5	83.1	4.7
Viscera	9.5	2.6	82.7	5.2
Viscera	9.5	2.7	82.6	5.2
Edible Meats (Avg. of 2 samples)	16.2	0.8	81.4	1.6

JELLIED EELS POPULAR IN GREAT BRITAIN

Each week throughout the year between 15,000 and 20,000 foil cartons of jellied eels are prepared in a factory in East London and dispatched by road and rail all over England. Some of the cartons are sold in shops, others in hotels and clubs, such as Fleet Street's famous Wig and Pen Club. Many of them go to markets.

Boxes of live eels are brought daily from Billingsgate and, until they are needed, are stored in a refrigerator of 500 cu. ft. capacity at the entrance to the factory. From there the eels are taken to an adjoining room, where they are gutted and sliced.

They are then washed in a special machine in which they are swirled about under a spray of water.

All of this preparatory work is done before the eels are taken into the main factory building.

The great bane of the eel trade is hooks. Many of the eels are line-caught and the hooks, or fragments of them may remain hidden in the meat even after careful cleaning. The firm has installed electronic testing equipment just inside the entrance to the factory. This machine detects any metal in the meat of the eels.

The eels are then boiled in large stainless steel containers; the broth which results from the cooking is used to make the jelly.

Eels caught in the summer months in Ireland or on the Continent need only between 5 and 10 minutes of simmering, while eels received in winter require between 15 and 20 minutes. Those received from the Mediterranean need from 25 to 35 minutes.

When cooked, some eels are packed in cartons, others in bowls. The bowls of jellied eels, which sell mainly in the summer months, are sent mostly to stalls, many of them at seaside resorts, and to race meetings.

Those sections of eel to be packed in cartons are placed in the cartons on a conveyor belt. As they travel along the belt they are automatically filled with juice and lidded.

The cartons are packed in corrugated cardboard boxes, which act as insulation, in each of which is packed a packet of shaped wooden spoons.

There are two refrigerators, of 3,000 cu. ft. and 1,500 cu. ft. capacity, for storing the bowls and cartons prior to selling. These are kept at a temperature of 40° F. It is important not to freeze jellied eels, as after thawing a film of water forms on top of the jelly which is harmful to the eels.

Altogether the firm supplies between 800 and 900 outlets, mainly in the London area, and they have 60 showcase refrigerators which they loan, without charge, for display of their products to the best advantage.

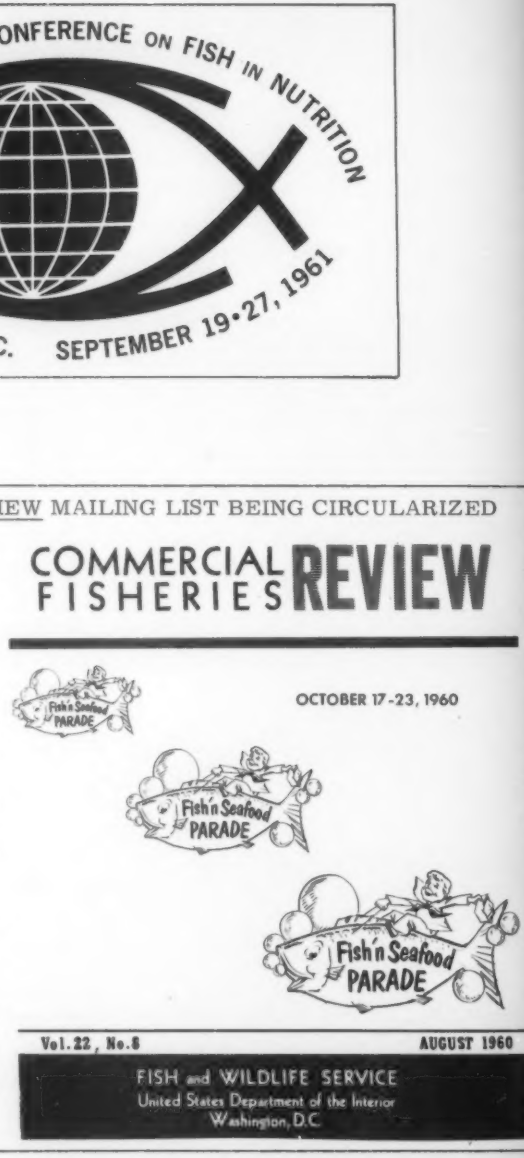
Traditionally, jellied eels are a summer delicacy bought from a stall, possibly at the seaside or outside a pub. By using modern methods this firm has made them available through more outlets to a wider public throughout the year. (Fish Trades Gazette, March 18, 1961.)

SEA SCALLOP SOUFFLE SNACKS

1 pound scallops, fresh or frozen
1 quart boiling water
2 tablespoons salt
¼ cup mayonnaise or salad dressing
1 tablespoon chopped parsley
1½ teaspoons lemon juice
¼ teaspoon salt
¼ teaspoon Worcestershire sauce
Dash pepper
1 egg white, beaten
2 tablespoons drained sweet pickle relish

Thaw frozen scallops. Remove any shell particles and wash. Place in boiling salted water. Cover and return to the boiling point. Simmer for 3 to 4 minutes, depending on size. Drain. Combine all ingredients except scallops and egg white. Mix well. Fold into egg white. Place scallops on a well-greased cooky sheet, 15x12 inches. Top each scallop with mayonnaise mixture. Broil about 3 inches from source of heat for 3 to 4 minutes or until brown. Makes about 36 hors d'oeuvres.

COMMERCIAL FISHERIES REVIEW MAILING LIST BEING CIRCULARIZED

Since Federal regulations require that all mailing lists be circularized periodically, a circularization letter dated January 27 was sent to all those on the Commercial Fisheries Review mailing list. (Individuals or firms who have been added to the mailing list subsequent to February 1, 1961, will not receive a circularization letter and will continue to be retained on the mailing list, unless the recipient meanwhile requests that his name be removed.)

The names of those firms and individuals who did not return the lower portion of the January 27 circularization letter will be deleted from the Commercial Fisheries Review mailing list. This issue (July 1961) will be the last one to be mailed to you if you did not reply.